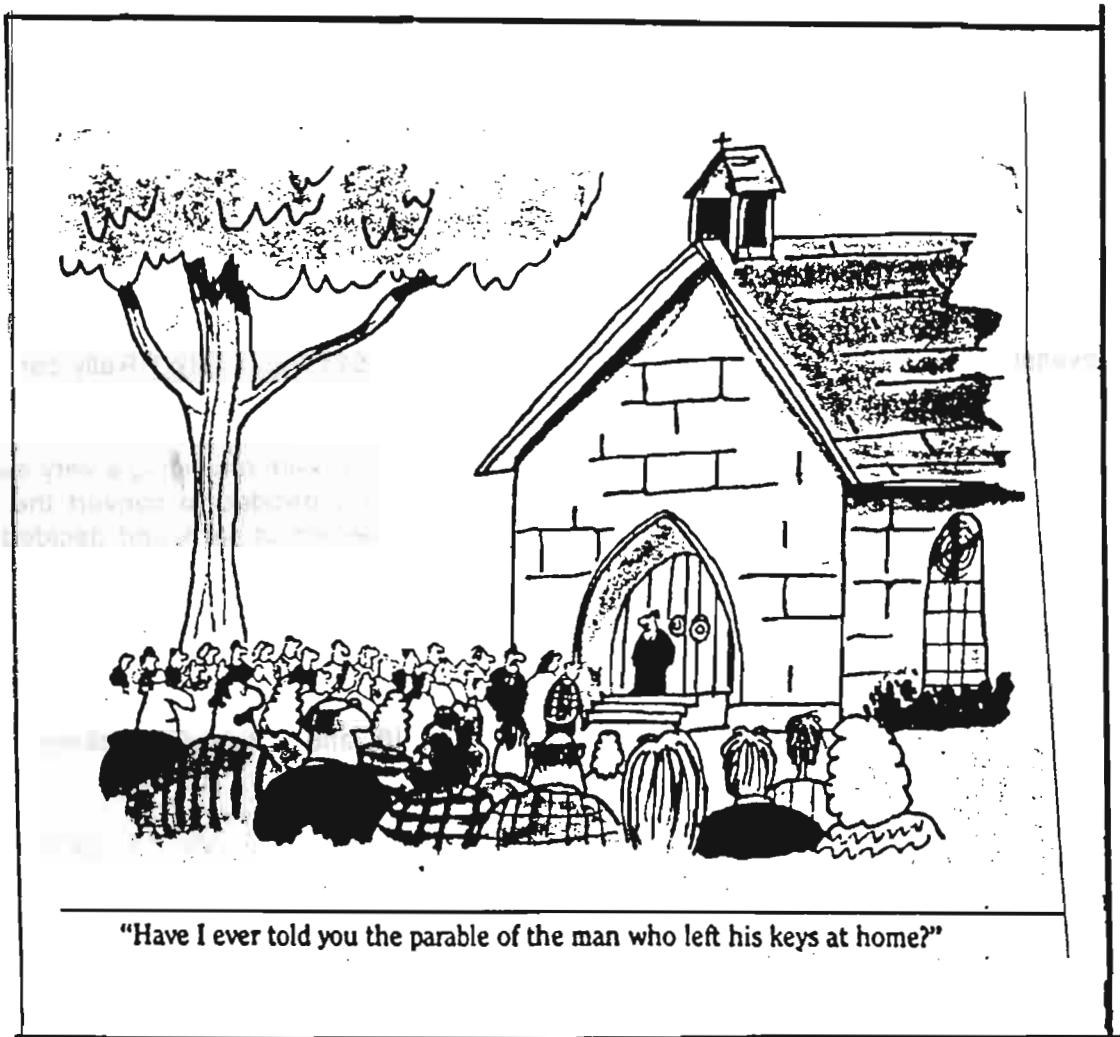


# LANDCRAB

CLUB OF AUSTRALASIA INC.



Club Newsletter Issue Number 72, February/March 1997



"Have I ever told you the parable of the man who left his keys at home?"

# INTRODUCING...

Peter Allen                      6 A Lambeth Place                      [03] 934 7726                      Mk 1 1800  
   St Kilda Vic 3182

Peter paid to have his car converted from auto to manual- a very common conversion these days- and had his worst nightmare come true. The people who performed the operation fitted a crook gearbox !

Peter is also one of many former 1800 owners who have returned to 1800's after an absence of many years

Rob Laird                      5 Florida Street                      [03] 9886 4182                      Mk 11 1800  
   Mt Waverley Vic 3149

Bill Stevenson                      4 Valerie Place                      0419 436 914                      Mk 1 Rally car  
   Orange NSW 3937

"I thought that it is about time to rejoin the Landcrab club. I am rebuilding a very early Mk 1 into a rally car. Since former member Garry Fry decided to convert the ex Richard Locke rally car into a road car, I took our collection of parts and decided to build the car that I have wanted for a long time " . .

David Wilson                      RMB 6169                      [03] 598 92093                      Looking  
   Red Hill Vic

David runs **Euromech** at **Arthurs Seat Road. Red Hill**, and is currently looking for a suitable project car.

Geoffrey Cooper                      10 Tonks St                      [073] 3277 2717                      Mk 11 1800  
   Moorooka QLD 4105

We now have **128 Members** in our club !

Allan & Judy Hogg  
22 Huntingdale Ave.,  
Miranda. 2228. NSW  
02 9522 8184  
20/12/96

The Editor,  
Dear Daryl,

I would be pleased if you would publish this in the next "Landcrab Newsletter".

In our travels before Christmas we called into the only Antique shop in The Rock, which is south of Wagga Wagga on the Olympic Highway through NSW and discovered a small treasure trove of Austin bits. There's a set of A40 front mudguards joined by the lower grille. A late 30's Austin 8/10 bonnet with emblem (\$50) and a Morris Minor bonnet and they all seem to be in reasonable condition.

There were two Austin hubcaps as well but they are mine now. ( a flying A and an original logo one).

We also bought (somewhere else) a British Repair Manual, 1950 edition published by Scientific Magazines Publishing Co. It has information on all British cars from Alvis to Wolseley from about 1934 to 1949. In the Austin area it covers the A40 and the 8,10,12 & 16 and includes Spec. sheets, wiring diagrams and workshop manual material. Generally it ranges from spec. sheets, though quite detailed, to small workshop manuals.

We would be happy to share this information with anyone who needs it.

If in your travels you see an Austin A95 in any form or condition we would appreciate details on its location so that we can embark on our next long term project of saving another Australian built/assembled Austin.

I also enclose a copy of British Leyland Service Training Notes TP830 Sept. 1970 and some Austin info. from a 1/4/71 Sales Handbook (which also includes Morris and MG) which you may care to publish at some time.

Merry Christmas and a happy and safe New Year.

Allan and Judy.



# Vintage Austin Register of Australia

Sec. David Vaughan  
11 Knox Road  
Romsey 3434  
(03) 9359 3777 w.  
(03) 54 295 721 a.h.

Secretary  
Austin 1800 Car Club  
22 Davison St  
Mitcham 3132

20<sup>th</sup> November 1996

~ Annual Austin Assembly ~  
British & European Motoring Show  
Sunday, 6<sup>th</sup> April 1997

Dear Secretary,

I am writing as several Austin Clubs and Austin enthusiasts have expressed an interest to get all Austin owners together on an annual basis. Easter last year 'Austins Over Australia' provided an great opportunity when over 150 Austins from 1922 to 1974 were assembled at Wangaratta, a similar gathering is expected at Toowoomba next Easter. However as the event is an Australian wide rally it does not give all Austin owners in Victoria a chance to participate.

Many 'marque' clubs have one day in the year when they assemble as many of their kind in one place at one time. Due to the fragmentation of Austin Clubs in Victoria it is next to impossible to agree on a date or place for such an occasion. It has been suggested instead of trying to agree on a date we could join an established event and also make it the annual gathering of the clan.

It seems fitting that the '**British & European Motoring Show**' organised by the Association of Motoring Clubs would be not only an excellent central venue at Flemington Racecourse but also an opportunity to view a large assembly of other makes derived from the same part of the world. Several other car clubs make this their main static display event.

The next 'Show' is on **Sunday, 6<sup>th</sup> April 1997**. Hopefully your committee would be agreeable to note the date in your Club's events listing and encourage Austin members and associates to attend, adopting this event as the **major annual Austin gathering in Victoria**.

I would be pleased if you could let me know whether your Club supports the idea and will participate in the 'Show' each year, so that we can proceed with promoting this meeting of Austin owners and make it a success.

Austins were one of the most popular British makes sold in Australia so we should be able to line up more Austins than any other makes on display.

Yours Sincerely,



*lets get together!*



# AUSTIN A40 CAR CLUB OF AUSTRALIA

Ron Short  
Club Captain  
A.A40.C.C  
6 Kurong Ave  
Frankston Vic 3199  
03 9789-6498

17th November, 1996.

FOR THE ATTENTION OF THE CLUB SECRETARY

Dear Sir/Madam,

We wish to extend an invitation to members of your club to join us for an "All Austin Day" on the 23rd February, 1997.

This will be held at our club meeting venue, Deepdene Hall, 120 Whitehorse Road, Deepdene, commencing at 10-00am. Cars will be parked on the sports oval for display. This will be the perfect opportunity to meet other Austin enthusiasts and also other entrants participating in the Austins Over Australia trip in March '97.

Barbecue facilities and hot water will be available on the day. (B.Y.O. everything.)

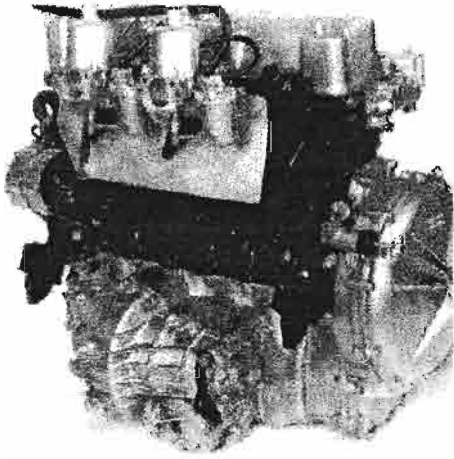
Should you have any queries regarding this event, please do not hesitate to contact me on the above phone number. Hoping to see you there.

Yours faithfully,

A handwritten signature in dark ink, appearing to be "Ron Short", written over a horizontal line.

RON SHORT.

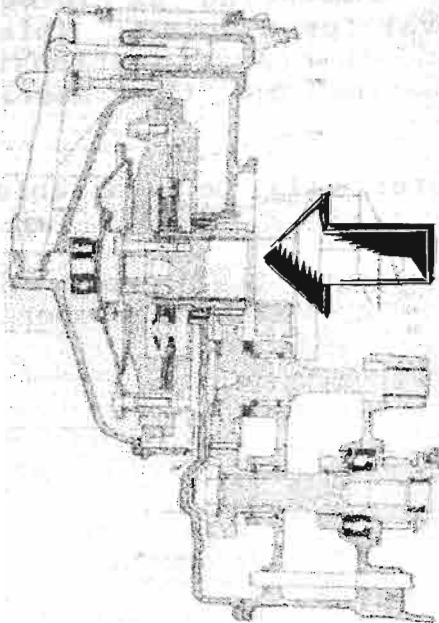
# E-series ramblings



It is surely the case that we would like to get the most out of our cars when they are running properly...and even more the case when they stop! That is to say a rebuild of a car generates the question "how can I improve on what the design team came up with?" We were in this dilemma when a Tasman came into my possession. Between us stripping down the body and getting enthused by the smell of stale engine oil and hydro' fluid, the concept of a "works" standard car was born.

Now, many of us would simply sit down and wait for this foolishness to subside. Others would mention this in passing to their significant other- where discussion of kitchen/bathroom renovations will see reason prevail and bank managers heaving a collective sigh of relief! Not so here. The throw away comment of "Let's get a car ready to run in competition" led to a grin and twinkle in Glenda's eye that spoke volumes. A replica Rally Car was a goer!

Earlier in the piece, we mentioned that both Glenda and I have been looking into the concept of a 'stroked' X6 engine that would make our modestly performing car a spritely sprinter for track meets as well as dirt. What follows is a run down on the findings that came out of our two years R & D on the subject. With this, we will outline the modifications we are running to give "Taz" some growl (yes Jonesy, hopefully it will 'eat the Wabbit').



**THIS IS THE PART OF THE SHAFT**

**IN  
QUESTION**

(P76 shafts are much fatter with a hollow section almost the same dimensions as the original X6 shaft)

The first suggestion came via the Landcrab News. It suggested that one get hold of a crankshaft from a P76 six cylinder, which then has the flywheel end ground-off and a replacement blank welded on in its place. Clearance wise this is a fine modification, as the transmission components still clear the sweep of the crank. The flywheel end of the crank will need to be changed as it is approximately three times the size of the one found in the X6. A pretty straight forward mod' I thought! On paper and in discussion most agreed. It was in practice that problems arose.

The firm who do my reconditioning and machining work are Westend at Campbelltown. These guys do a great job, and make a reasonable name for themselves building race and performance engines. Their main concern about this method was the weld... no one can 100% guarantee the integrity and reliability of a weld. Given the position of the flywheel and a rev range on this particular car of 5,000+ RPM, it was suggested that there were more respectable ways of getting a vasectomy...should I need one. So, with squeaky voice, we disregarded this option.

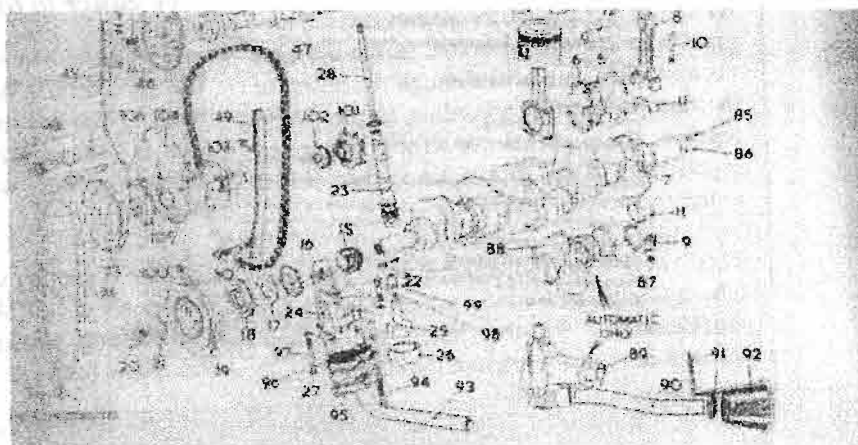
Next suggestion on this score was to bolt the modified end shaft onto the crank. This will be familiar to those amongst us who have read Vizard's book on modifying your Mini. The considered opinion on this was that there was not enough room to make the necessary alterations to the crank- scratch that idea...

Yet another solution was to weld the journals on the crankshaft and re-machine them to allow the extra stroke, using the original crank! This as you can imagine is a pretty expensive option, with no guarantees. Four-figure sums were mentioned! The specialists that assessed this for us were also unconvinced that the process would be a success.

In the meantime, we heard from a number of sources that "the Firm" had experimented with this concept and even built up a car for road test. For some reason, this prototype would not run properly- it was written off as uneconomical to pursue. What happened to that particular car? Who knows. It could be fill under the bridge over the Gorges River for the M5! If anyone can shed any light on this, please put pen to paper...

So, there you have it! In our case, we figure it's easier to go with a bored out 2227cc E-series with maybe triple HS6's and big bore exhaust...but that's your lot for now. Further E-series ramblings will follow soon. In the meantime, I've got to get "Taz" up and snarling for AOA Toowoomba. You should plan on being there too so we can fly the Landcrab banner high.

Keep on crabbing 1st class  
Michael & Glenda Gilmore





# LANDCRAB RESTORATIONS

## The All-New Design Rotisserie

- or -

### How to do a Bare Shell Restoration Without Going (Totally) Crazy !

Many's the time I have perused the pages of such restoration magazines as *Practical Classics* and others of that ilk, to see car rebuilders turn the car on its side to make floor pan repairs easier - as well as painting, rust proofing, sound deadening, etc. A great idea! However, if you have ever tried to roll a 'crab on its side, you'll know that this isn't easy. It may even be easier to toss a bull!

Now, from time to time, people have been shown in these same magazines using or advertising "you-beaut" car flippers. Those commercially available tend to cost an arm and a leg. It was whilst I was at TAFE one night in 1993 that my teacher (yes, even teachers have teachers ... it was a nice change to be a student!) showed us the idea of a rotisserie.

This is a great boon for those of us undertaking a large scale restoration/rebuild. With the car stripped down, it can be placed on the rotisserie for major body work and painting. Assembly of such things as suspension, brakes, hoses and so on could also be undertaken at this stage.

As can be seen from the accompanying diagram, the car can be bolted to the uprights via a bracket that bolts through the holes for the bumper irons - according to the TAFE teacher, these points are strong enough to support the car! This bracket is then bolted to the "wheel".

This wheel is an old brake drum - you may have a few lying around - which has two (2) modifications. Firstly, holes are drilled through the outside edge of the drum.

This allows the car to be locked into any angle you choose. This could be easier seen in the diagram. The second modification is the axle which fits into the upright post.

Please not that this is not really a quick put up and spin "toy". It really only comes in its own in a "nuts and bolts" rebuild. Kerry, the guy who told me about this, has done a number of these on Mustangs - he swears by it. It is also stressed that all bodywork except for sill work can be done with the rotisserie in place. Sill work really needs to be done with the car all "jigged" up.

Furthermore, dimensions are not shown here for materials. Mine is being made up by a friend for about \$200.00 - but I've stipulated it has to be flexible - there's at least 3 'crabs, a Mini and a P76 to deal with! So stresses will vary with 'crabs. For those interested -

---

*...if you have ever tried to roll a 'crab on its side, you'll know that this isn't easy. It may even be easier to toss a bull!*

---

I'll give details as soon as they come to hand. If you are handy - or know someone who is - these rotisseries (so I'm told!) are common sense - well, that speaks volumes about me!

So, here is another value-for-money tip from the annals of LOCA. I hope your 'crab has fun hanging around, hanging out, getting into a spin (oh, will someone stop him!)



***We do not recommend doing this sort of activity in mainstream traffic!***

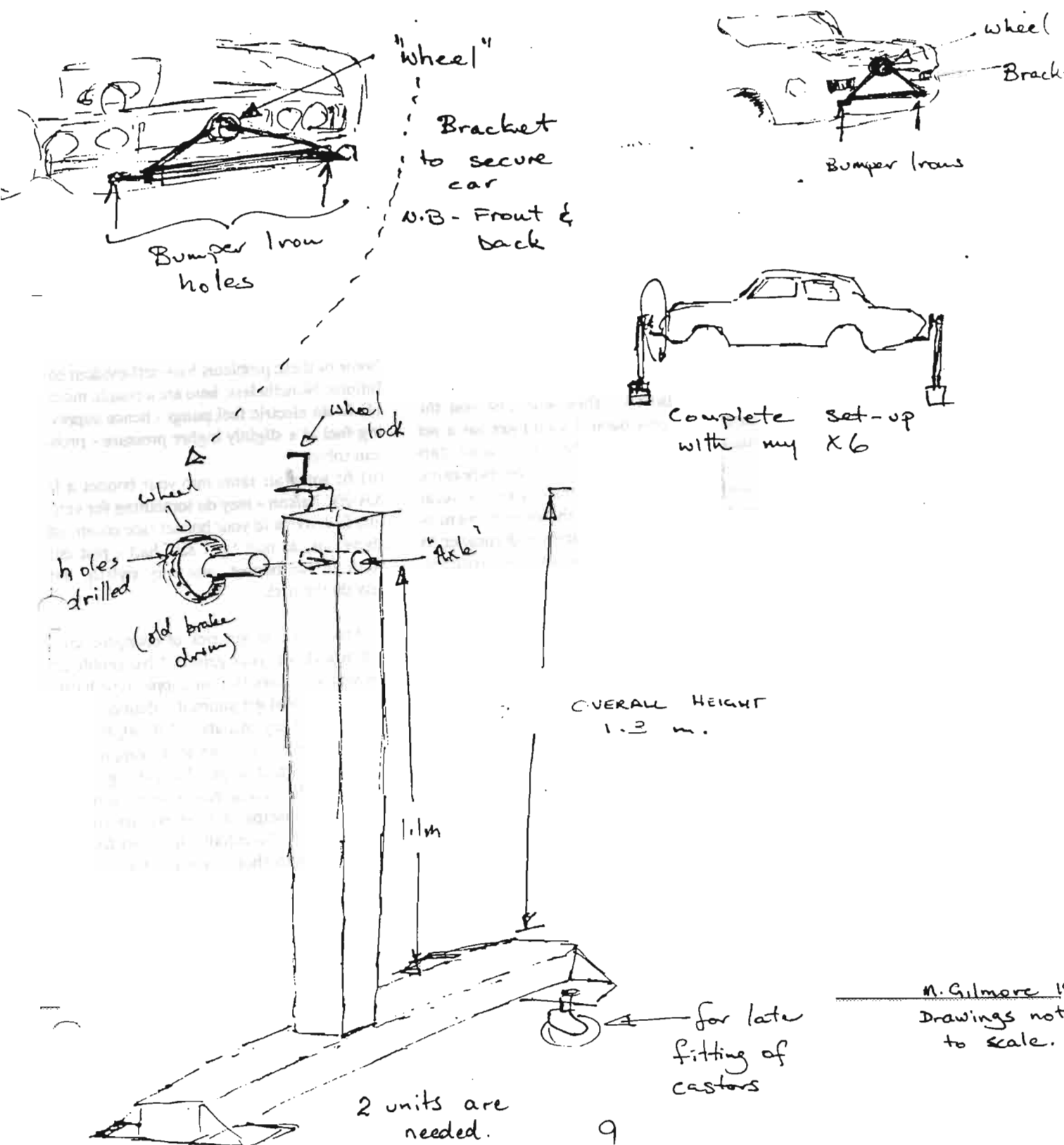




Just remember, the Club, nor I, can not accept responsibility for problems that may be encountered in this exercise. If you can see any way of improving this system, be sure to drop a line to point this out to the Club and its members. It is the collective wisdom of 100+ members that we have a Club for anyway!

Happy 'crabbing

Michael Gilmore



M. Gilmore 1999  
Drawings not to scale.



## Some Handy Tips From Those Who've Got It Wrong!

It is a "Burke's Backyard" dictum that you get it right by doing it wrong! So, for the LOCA members, here are a few pearls:

1. When fitting Rover wheels to a 'crab, it is necessary to have the inner hub of the wheel machined with a step. Morton and May Wheels, the specialists in the El Toro Estate at Warwick Farm in Sydney can do this for a small fee. To quote them, "We do this stuff all the time!" If you don't do this, you will have wheels that don't fit properly - hence wobbling about and causing mega damage to your wheel assemblies (and being very embarrassing into the bargain!). Also, be sure to do this when you don't have tyres on the wheels, otherwise you will be charged for fitting tyres as well as the machining.

Whilst on the subject, the back wheel arches will need to be "doctored" - to wit, knocking the inner flanges back to prevent rubbing tyres as they hit bumps, or if you are carrying a sizable load.

2. Don't worry about getting extractors made for an X6 - they will cost you the earth! The best quote I could get for a set made for my car was \$700.00 - then we start fiddling to make them fit - an expensive proposition! In the meantime, several sources have noted that the improvement is marginal at best. It is easier and cheaper to go for a bigger bore in the exhaust, with the Factory headers left in place.

3. If you want an X6 HO (handling option), replace the old rubber assisters with 2 convolution Aeons (see previous Landcrab News). This tightens up the car's rear end quite nicely. Mini-style shock absorbers (dampers) fitted to the front are also a recommended modification - if this wasn't enough.

On the other hand, if the standard ride is what you are after, the 4 convolution Aeons make a good replacement. This is a decided help because the original rubber assisters are N.L.A. - you may be lucky sometimes, however, at swap meets. In either case, modifications are needed. See diagram attached.

Please note: If you are not careful, the flange

on the fuel tank will rub the Aeon - hence "chewing" it. You have been warned.

4. For those of you with twin S.U. X6's with vapour locking problems - here's a few things to check.

(a) That there is a twin set of heat shields at the manifold. Earlier cars often only had ONE.

(b) The fuel line is running around the bulkhead as far as the brake servo. Some repairers may have replaced bits over the history of the car - causing engine temperature to pre-heat the fuel.

(c) The car may (somehow) have missed the recall in 1971 that replaced the side draft carbs for semi-down draft. I don't understand why - but supposedly it makes a difference.

(d) Follow Han's advice and check the complete cooling system etc. This will help to lower engine running temperatures and engine bay ambient temperatures.

Some of these problems have self-evident solutions. Nonetheless, here are a couple more:

(i) fit an electric fuel pump - hence supplying fuel at a slightly higher pressure - problem solved.

(ii) fit some air rams into your bonnet a la XA-XC Falcon - may do something for you.

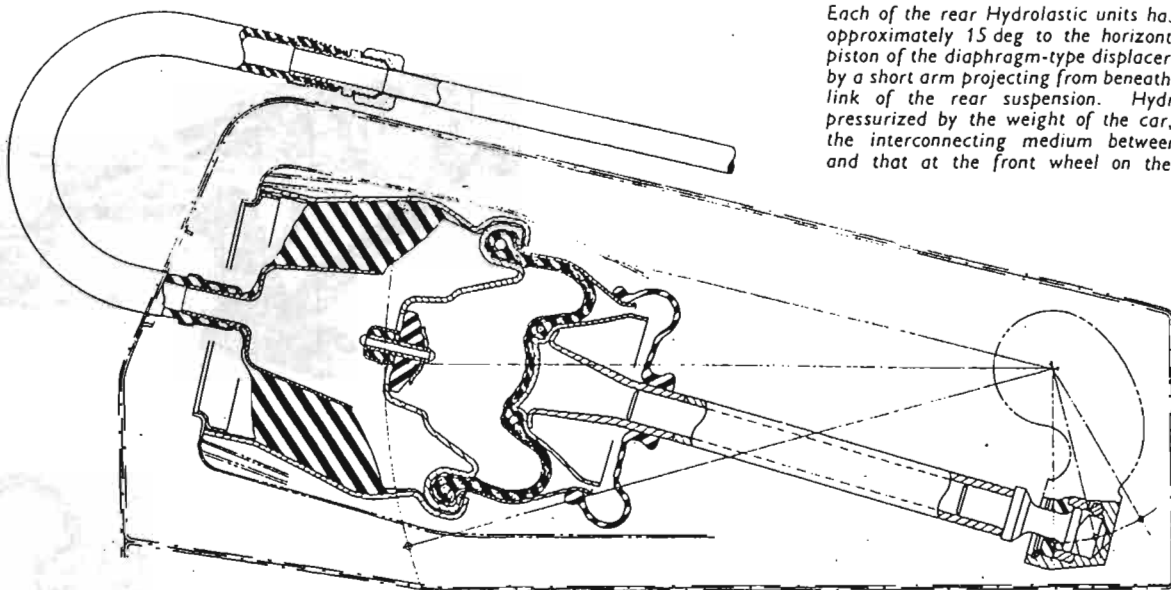
(iii) fit louvres to your bonnet (see comment above) or, as one car I saw had - just cut holes in the bonnet. Not very stylish, but may do the trick.

5. Have you ever got sick of changing cutting wheels on your grinder? No problem! Get yourself down to a tile supply-type hardware centre and get yourself a diamond cutting wheel. They cost about \$30.00, but last heaps. Mine only gave up after dropping the thing from a great height. The cutting wheel broke as well... These give a nice, clean cut and it saves heaps of time not having to change wheels. Potentially, they last forever in a home workshop situation. Oh, by the way, they'll cut just about anything, but don't use them on Masonry.

Well, there's some things to carry on with. I hope to get some more bits together soon - yes, I've done lots wrong! In the meantime, keep on 'crabbing.

Michael Gilmore

...you get it right by  
doing it wrong!



Each of the rear Hydrolastic units has an axis approximately 15 deg to the horizontal, and the piston of the diaphragm-type displacer is deflected by a short arm projecting from beneath the trailing link of the rear suspension. Hydraulic fluid, pressurized by the weight of the car, is used as the interconnecting medium between this unit and that at the front wheel on the same side.

## HYDROLASTIC SPRINGING

*The Design and Development Story, as told by Alex Moulton, the Originator of this Hydraulically Interconnected Rubber Springing System Used on the Morris 1100 Car*

IN view of the considerable success of the ADO 15 vehicles, which have been introduced in the last three years by the British Motor Corporation, it has been obvious that a range of larger cars of similar layout, designed by the same team, headed by Alec Issigonis, would follow. This now-familiar arrangement—a transversely installed, in-line engine built integrally with the transmission unit; front-wheel drive and a long wheelbase; independent suspension, with rubber springs and small-diameter wheels—

By virtue of the installation of the Hydrolastic system, the ride of the Morris 1100 is virtually free from pitching, and its roll-stiffness is high. This car is shown rounding a corner at speed over rough ground.



offers considerable benefits in terms of road-holding performance, fuel economy and the ratio of the interior to overall volume of the car. A factor that has contributed to both the excellent road-holding and the high efficiency in terms of space utilization has been the use of Moulton cone-type, rubber springs for the road wheels—they occupy a relatively small space by comparison with that required for orthodox steel springs, and their progressive-rate characteristics can be brought closer to the ideal than could those of the conventional springs.

The larger car now introduced, the ADO 16, is to be known to the general public as the Morris 1100, and it is described later in this issue. From the technical viewpoint, its most interesting feature is the ingenious system of hydraulically interconnected rubber springs—also of Moulton design—which are hardly less compact than those of the ADO 15. The standards of road-holding and ride afforded by this layout have already been the subject of wide acclaim. The layout, termed the Hydrolastic suspension system, was developed through the collaboration of three organizations—British Motor Corporation Ltd, Moulton Developments Ltd, and Dunlop Rubber Co. Ltd. In each car there are two separate, identical systems, one for the left- and one for the right-hand pair of wheels: there are no levelling mechanisms, pumps or accumulators, and no need for adjusting headlamp angle to compensate for vehicle loading; the two systems are pressurized by the weight of the car. The cost is said to be comparable to that of an orthodox springing and damping system on a car with all-independent suspension.

Judged in absolute terms, Hydrolastic springing is an innovation of the very highest technical merit. In the overall field of vehicle springing, its introduction on a small family car in volume production is an especially noteworthy aspect, and great credit is due to the British Motor Corporation.

don for sponsoring the work. Experience with this new vehicle has already demonstrated convincingly that a highly efficient springing and damping system does not necessarily carry penalties in respect of bulk, complexity, weight, reliability or cost.

The fact that a totally original concept has been brought from the patent stage to production in six years is also creditable. For, although the characteristics of rubber as a springing medium are now well known, a completely new technology in respect of hydraulically deflected rubber elements has had to be developed. Furthermore, economy of production had to be borne in mind throughout every stage of the development programme, because this high quality springing system was planned, from its inception, for a low-cost vehicle destined for very high rates of production.

Since a prerequisite for obtaining the maximum space for the occupants is a long wheelbase relative to overall length, some form of interconnection of front and rear springs was considered essential for maintaining an acceptably high standard of ride. The need for adopting interconnection to reduce pitching frequency has, of course, been appreciated for many years and has been acknowledged in practice by the adoption of this principle—but with mechanical interconnection—in the Citroën 2CV and AMI 6 models. An article giving the theory of interconnected suspension was published in the January 1957 issue of *Automobile Engineer*.

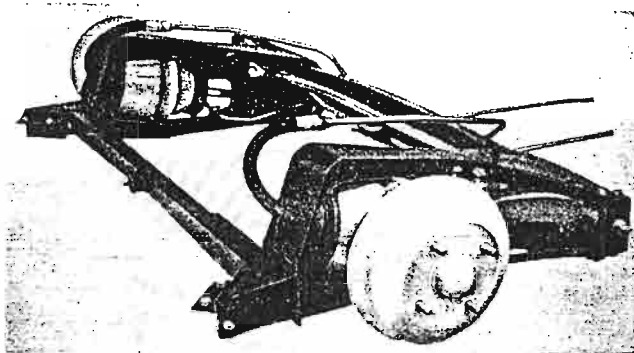
Orthodox springing layouts have the limitation that the front and rear suspension frequencies have to differ to minimize pitching, which would otherwise occur owing to coupling of the pitching and bouncing modes of vibration. As a result, the rear-seat ride is frequently inferior to that at the front. On the ADO 16, however, by virtue of the interconnection of the front and rear springs, pitching is minimized and the motion is harmonic and jerk-free. In practice the permissible lowness of the frequency is limited by the need for avoiding excessive variations in the static attitude of the vehicle when the fore and aft distribution of its load is changed. The small Citroën car, for instance, has a low pitch frequency—of the order of 50 c/min—and since its attitude varies widely with load distribution, provision is made for adjusting the angle of the headlamp beams relative to the road.

Readers may be interested to know that a prototype car with an interconnected springing system was working as long ago as 1935. This was designed by Issigonis in collaboration with J. N. Morris, now Chief Engineer of S.U. Carburettor Co. Ltd. The car had double-wishbone suspension and torsion-bar springing at front and rear; on each side of the car, the pair of torsion bars extended forward or rearward to a differential gear mounted on the chassis midway between the wheels; the end of each bar was splined into one of the bevel gears.

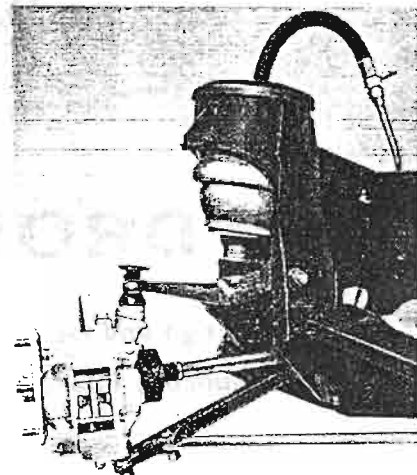
#### Description of the Hydrolastic system

The spring element for each wheel comprises tapered inner and outer sleeves between which is bonded an annular, natural rubber spring of a highly resilient mix. Thus, when deflected axially, the spring is subjected to both compression and shear forces, and, like the cone springs used on the ADO 16 car, has a progressive-rate characteristic. Immediately beneath each spring, and forming part of a common assembly, is a hydraulic piston, diaphragm and cylinder unit, termed the *displacer unit*.

Both sleeves are steel pressings. The inner one is of cupped form, and the outer one is part of a fabricated canister serving as the hydraulic cylinder. The upper end of this canister is held, by the spring pre-load, firmly against the suspension sub-frame. Hydraulic fluid is contained between the lower face of the rubber spring and a diaphragm



Above: In addition to the anti-roll bar between the trailing links of the rear suspension, there are small-diameter torsion bars to limit the static pitch attitude of the vehicle. Right: The front Hydrolastic unit is identical with that at the rear, but operates at a different leverage



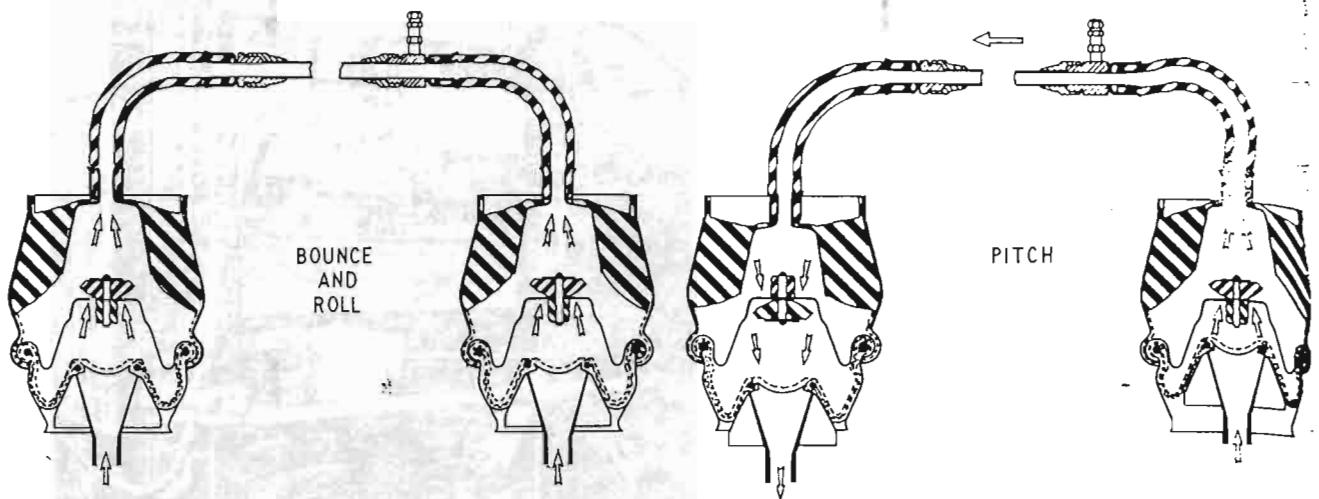
The compactness of the unit, which weighs 9 lb., is demonstrated here. In service, the flexible hose allows for the deflections of the spring and for slight movements of the rubber-mounted sub-frame relative to the hull. Each unit is held firmly in place in its sub-frame by the pre-load on the spring. The damper is well protected

that closes the bottom end of the canister. Interposed between this diaphragm and the spring is the damper assembly, comprising a conical cup-shape pressing, termed the *port-plate*, on the centre of which are mounted the rubber flap type damper-valves. There is also a permanent bleed hole in this port-plate.

The outer edge of the diaphragm is, of course, clamped around the lower end of the canister, while a conical piston assembly, connected to the suspension arm, seats on the centre of the lower face. As the suspension moves up and down, the motion of the piston deflects the diaphragm, which rolls within a steel skirt pressing of approximately conical form, the upper end of which is also secured to the lower end of the canister. As can be seen in the accompanying illustrations, the taper of the skirt pressing is in the opposite sense to that of the piston.

Nylon-reinforced moulded rubber is employed for the diaphragm. Further reinforcement is afforded by two concentric beads of steel wire, to which the nylon cords are anchored. One of these beads reinforces the periphery and the other seats around the crown of the piston. A thin

There is one system on each side of the car. When both wheels are disturbed to the same degree, as in pure bounce—rarely experienced—or in roll, no interflow of fluid occurs. Consequently, the progressive-rate springs are deflected together and the ride is firm. If only one wheel is disturbed, fluid passes through the conduit to move the other wheel in the opposite sense. This reduces pitching and also, because the springs are partially deflected, produces a softer ride. The throttling effect of the conduit is beneficial to the quality of the ride at high road-speed.



liner of butyl rubber is fitted over the upper face of the diaphragm, to ensure impermeability.

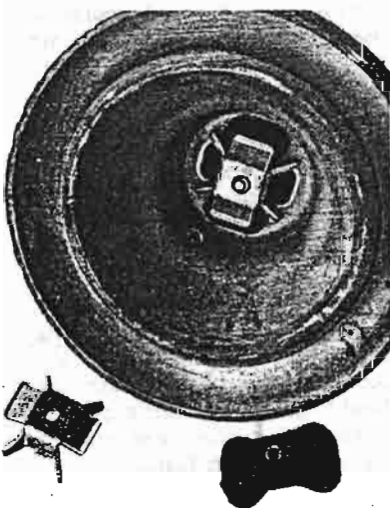
There are two separate seals. One is between the periphery of the diaphragm and that of the port-plate, while the other is between the port-plate and the lower end of the canister. During assembly, the first is effected by clamping the peripheries of the butyl lining and the diaphragm between the flanged upper end of the skirt and the rolled-over periphery of the port-plate. Then the second seal is made by pressing the rubber lined lower end of the canister around the rolled-over portion of the port-plate. This bonded lining is an extension of the spring material within the canister. In this way, a remarkably sturdy unit, weighing approximately 9 lb, is formed.

The four damper ports punched in the port-plate are oval. They are identical and are equally spaced on a common pitch circle: one diametrically opposed pair works during bounce and the other during rebound strokes. Each of these two functions is controlled by a separate rubber flap component which, as viewed in plan, is of waisted form. There is one on the upper face of the pressing: this controls bounce. The other—disposed at 90 deg to

the first-mentioned one—is on the underside and controls rebound. Each flap component has a bonded-in ferrule and a single rivet is passed through it and the centre of the port-plate to secure two small steel pressings, one straddling each flap. The ends of each of these two saddle pieces extend into the punched holes of the other damper valve, to afford angular location. Extending laterally from the central portion of each retainer saddle are two tongues which during assembly are bent down, by means of special equipment, on to the projecting ends of the flap components, to set the blow-off pressure of the valve. It is claimed that rubber flap-valve dampers have longer working lives and are more reliable than orthodox metal ones, and that the mechanized setting process affords a much closer control over damping characteristics than has hitherto been possible. In addition to these pressure-controlled valves there is, as was already mentioned, a single fixed orifice that functions as a bleed control; this hole is situated on the tapered face of the port-plate.

On each side of the vehicle, Bundy tubing,  $\frac{1}{2}$  in diameter, interconnects the two Hydrolastic units. It is accommodated in the floor-tunnel along which the exhaust pipe and brake line are taken. To allow for movements of both the spring and the suspension sub-frame, the ends of the conduit are connected to the spring units by a hose approximately 1 ft long. One end of each hose is fitted over a serrated extension-piece butt-welded to the inner pressing of the spring and, at the other end, the connection is a standard threaded union.

There is a Schrader charging valve in the pipeline: it is close to the front Hydrolastic unit and accessible through the engine compartment. Through this valve, the system is charged with hydraulic fluid—a mixture of 49 per cent demineralized water, 49 per cent alcohol, 1 per cent triethanolamine phosphate and 1 per cent sodium mercaptobenzthiazole. This fluid is, of course, an anti-freeze solution of constant viscosity, containing a rust inhibitor and an agent that is added to make the fluid distasteful—a legal requirement. Before the system is charged with fluid at a pressure of about 205 lb/in<sup>2</sup>—the standardized pressure for an unladen vehicle—an 80 per cent vacuum condition is induced by an exhaustor pump. During service, the pressure may rise to 450 lb/in<sup>2</sup> at full bump, and may drop to as low as 70 lb/in<sup>2</sup> on conditions of full rebound.



The underside of a port-plate, showing the bleed-hole and the rebound valve in position. Above each end of the rubber component is a tongue that is pressed down to determine the blow-off pressure



### Operation of the system.

As was previously stated, the function of interconnection between front and rear springs is to reduce the pitching frequency of a vehicle equipped with road springs of a bounce frequency affording good handling characteristics. For the Morris 1100 car, the frequencies are 90-92 c/min bounce and 65 c/min pitch. A reduction in pitch frequency can be achieved by shortening the wheelbase, of course, but this, as already mentioned, is undesirable.

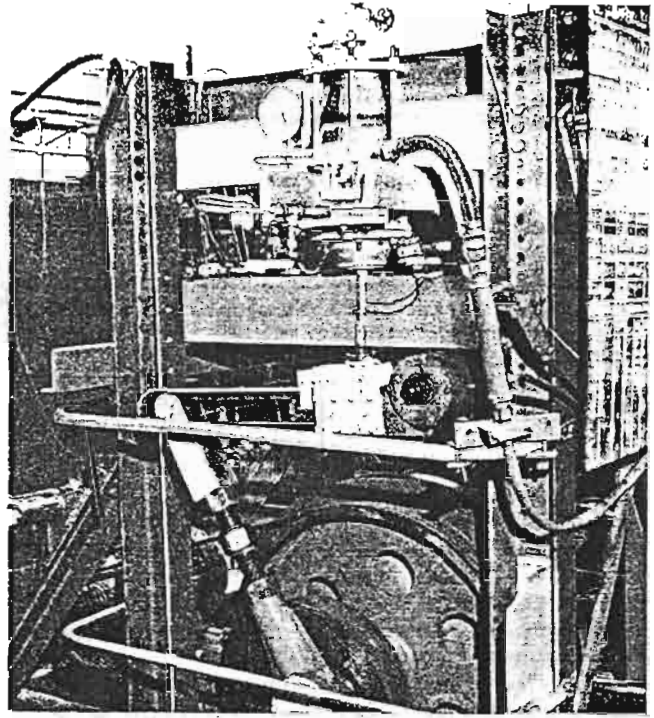
Clearly, the most frequent disturbances to a car travelling in a forward direction are those due to road irregularities that are contacted first by the front wheel and then by the rear wheel on the same side of the vehicle. In a conventionally sprung car, each of these movements causes angular acceleration in the pitch mode. When a front displacer unit of the Hydrolastic system is deflected by a movement of the road wheel, fluid is impelled through the conduit to the rear displacer, which raises the rear end of the car and thus reduces the angular acceleration. As a result, pitch is virtually eliminated and the car maintains a substantially level attitude. Because of the interconnection of the front and rear springs, the dynamic loads on any one wheel are shared by both, the actual proportions distributed between the two being determined by the throttling action of the conduit. Full wheel movement, therefore, is not normally accompanied by full spring movement, and a relatively soft ride is produced. At higher road speeds the resistance of the pipe to fluid flow increases, as the cube of the fluid velocity, and this steadies the car in the pitch mode. The effective diameter of the conduit is critical. On the Morris 1100, the conduits are of larger bore than is necessary, but each incorporates an orifice plate which determines the ride characteristics.

If both displacer units are deflected simultaneously—as in pure bounce or roll—no interflow occurs, so the pressure of the fluid is conveyed entirely to the springs, which deflect simultaneously, giving an increased suspension rate. Since a condition of pure bounce is rarely experienced, the full effect of two springs acting together is normally felt only during roll, when the outer wheels deflect in concert. The figure quoted for the roll stiffness of the ADO 16 is 5,000 lb-in/deg, which is remarkably high for a saloon car.

The siting of the flap-valves adjacent to the diaphragms ensures that all wheel movements are damped. Small displacements of fluid are throttled only by the constant-diameter bleed hole. During more arduous conditions of operation, the main dampers take over; these are progressive in action, and an adequate level of damping is afforded for all types of terrain. Because of the volume of fluid available for dissipating heat—3.84 pints per system, or 7.68 pints per car—damper fade is not encountered.

Mention has been made of the taper configurations of the piston and the skirt against which the diaphragm rolls. This feature, in addition to being of value in respect of supporting a large area of the diaphragm, helps to stabilize the vehicle in the pitch mode and also contributes to the non-linear springing characteristics. As the piston deflects, the effective area of the diaphragm is increased. In pitch, the displacer fluid is conveyed to the other unit—in which the diaphragm's effective area progressively decreases—and the resistance to pitching therefore rises; in bounce, however, the rate of increase of pressure in the fluid falls, so the apparent spring rate rises.

To minimize changes in the static pitch-attitude, a small-diameter torsion bar is incorporated between each rear trailing arm and the chassis frame. This avoids both the unpleasant appearance of a car with an excessive nose-down or tail-down attitude, and the need of adjusting the headlamp setting. Another anti-roll bar is fitted between the rear trailing arms, to counteract the inherent understeering



*Fatigue-testing of all components was carried out on rigs such as this. In the Hydrolastic unit on test here, the middle portion has been replaced by a Perspex section, so that operation of the valves can be observed. On the far side of the machine is an identical linkage, and inter-connected units can be run simultaneously, either in or out of phase*

characteristic of the vehicle, which arises from the fact that 62 per cent of the unladen weight is carried by the front wheels. Since—to rationalize the production of primary equipment and spares—all four units on a vehicle are identical, different leverage ratios have been adopted at front and rear. That at the front is 3.95:1, and that at the rear 4.4:1; wheel rates are therefore greater at the front than at the rear, and the anti-roll bar reduces the resultant excessive understeer to an acceptable level.

The ends of the anti-roll bar are bent through 90 deg and drilled, so that they can be bolted in the usual manner to the inner faces of the trailing arms. Sandwiched between each drilled portion and the trailing arm is a forward-extending lever with a square hole near its end, to take the squared end of a pitch-control bar, which of course is installed laterally. The inner ends of the pitch bars are bent forward through 90 deg, and register in steel bushes carried in the cross-member of the sub-frame.

Three features therefore control the pitch of the vehicle. They are the taper configuration of the displacer, the geometry of the suspension linkage, and the pitch bars. Bounce is controlled by these three features and the road springs, and roll is controlled by all four, plus the anti-roll bar. An inherently good aspect of the vehicle design is that the pitching moment due to braking is counterbalanced by the torque reaction on the rear trailing arms, with the result that there is very little change of pitch attitude during braking. The manufacturers contend that, despite the absence of provision for control of ride or levelling, the qualities of ride and road-holding, even at their present level, are sufficiently in advance of current standards to justify the decision not to incorporate such features.

### Development history

The first of many Moulton patents dealing with hydraulically interconnected rubber springs was taken out in 1955; in the specification, figures for bounce and pitch frequencies

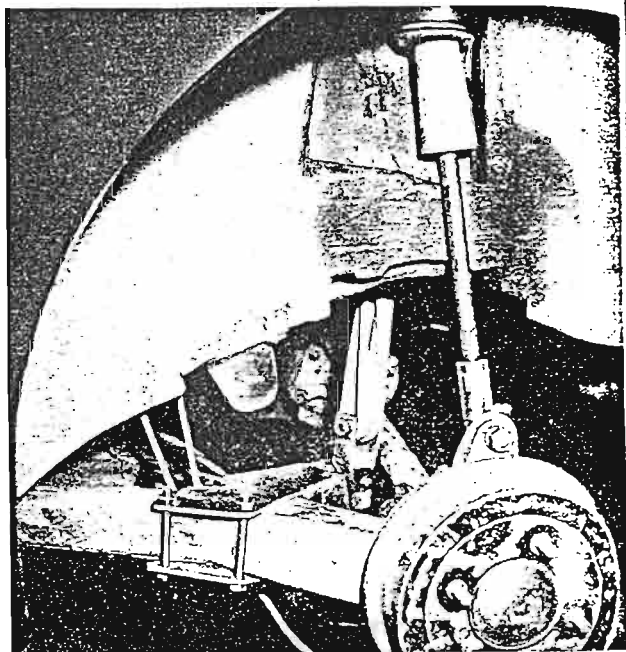
—85 and 60 c/min respectively—were quoted as being achieved on a rig arranged to simulate the inertia of a vehicle with hydraulically interconnected rubber springs. It was for the purpose of developing this and subsequent patents, in exclusive application to B.M.C. cars, that the firm of Moulton Developments Ltd.—an associate firm of B.M.C.—was incorporated.

The development history of the Hydrolastic system is remarkable for the close and harmonious collaboration between the three interested companies—Moulton Developments Ltd, the designers; British Motor Corporation, the users; and Dunlop Rubber Co. Ltd, the manufacturers. Throughout the development period, weekly visits were made by Alex Moulton to both the Dunlop factory, where the meetings were under the chairmanship of Mr. H. Trevaskis, the Technical Director, and also to the Suspension department at the Cowley works of B.M.C. The work of the Suspension department was entirely devoted to damping requirements and to problems connected with the application of the system to vehicles. Over 250,000 miles of road-running were carried out on Morris Minors converted to independent rear suspension. Concurrently, rig-testing took place at the Moulton establishment at Bradford-on-Avon.

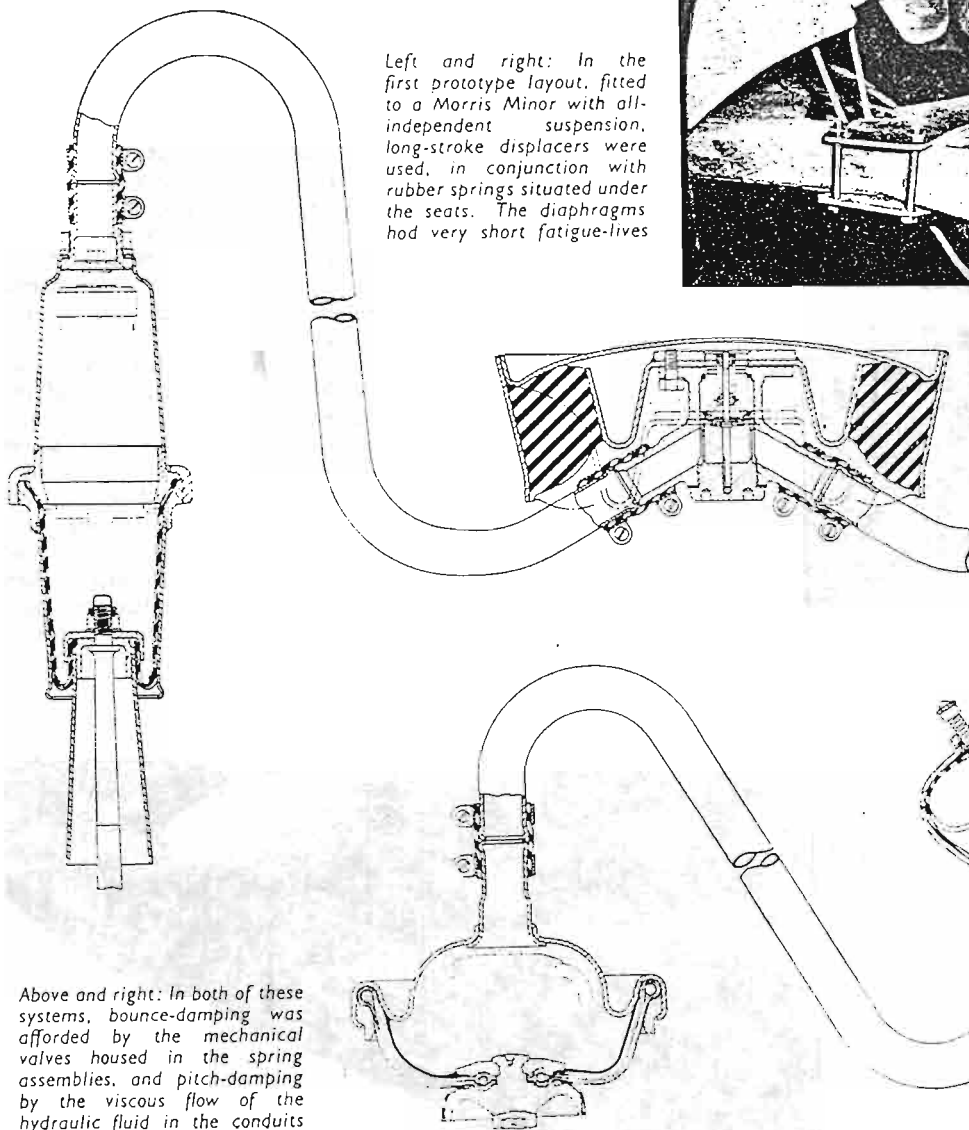
In this way, the technical responsibility was vested in Moulton Developments Ltd, but Alec Issigonis — having overall technical control and approval — was kept informed

of all changes and decisions. To keep the evaluation function separate from the manufacturing function, Moulton Developments Ltd. were responsible for the testing and evaluation of all components. During the whole of the development period, the rig shop at Bradford-on-Avon ran at a very high factor of utilization: the figure for one particular year—including nights, week-ends and holidays—was 82 per cent.

From the outset, there were three basic aims. First, the system was to be completely sealed, so that there should be no maintenance problems of the type associated with glaze or pumps. Secondly, for simplicity, rubber was to be used as a springing medium in bounce. Thirdly, the dampers



Left and right: In the first prototype layout, fitted to a Morris Minor with all-independent suspension, long-stroke displacers were used, in conjunction with rubber springs situated under the seats. The diaphragms had very short fatigue-lives



Below: To improve the working conditions of the diaphragm, a lever-operated short-stroke displacer was introduced; the diaphragm incorporated beading rings. The springing medium here was nitrogen contained in a butyl rubber seal

Above and right: In both of these systems, bounce-damping was afforded by the mechanical valves housed in the spring assemblies, and pitch-damping by the viscous flow of the hydraulic fluid in the conduits

mechanism was to be integral with the hydraulic inter-connection. Most of the stages in the following account of the development programme are depicted in accompanying illustrations.

*Stage one, July 1956.* One of the first experiments to take place after the incorporation of Moulton Developments Ltd. involved a layout in which a 9 in diameter annular rubber spring—in which the rubber was stressed in combined compression and shear—was coupled hydraulically to a pair of 2½ in diameter displacer units of the rolling diaphragm type; there was one displacer at each wheel, of course, and the springs for the two systems were installed beneath the front seats in the car. The stroke of the pistons was virtually the same as wheel movement, and static hydraulic pressure was 100 lb/in<sup>2</sup>. Rig tests showed that the diaphragms had a fatigue life of only 0.25 million cycles; the target figure was 1 million cycles. Failures of these components—which were of only single ply construction, to accommodate stretching during rolling—were caused by inadequate burst strength, pinching due to inadequate radial clearance, and abrasion due to the high-velocity rolling action; hence, displacers of long stroke and small diameter were abandoned. In this layout, a single damper valve, serving two wheels, was contained within each spring casing, and was of the orthodox spring-loaded metal type.

*Stage two, December 1956.* Operation of the next displacer, of 7½ in diameter was based on flexing rather than rolling. The diaphragm was reinforced by six plies of nylon tyre cord, and withstood 2 million cycles on the rig. Lever operation of the displacer was adopted—and retained

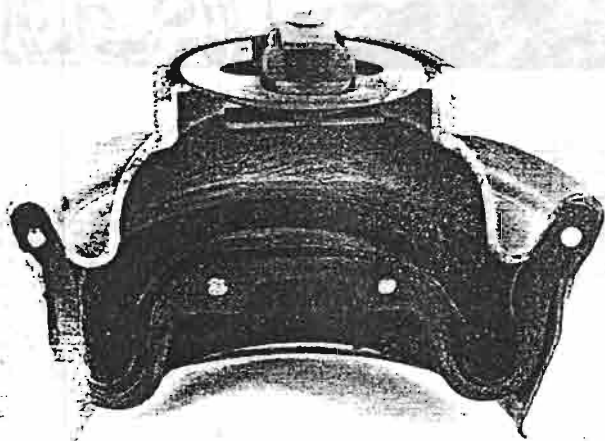
thereafter—to shorten the stroke of the unit. Despite its acceptable fatigue life, this diaphragm was found to be too cumbersome and stiff for production purposes. It incorporated two beads, however, the inner attached to the piston by a riveted-on collar, the outer clamped in an annular fold of the casing by a pressing operation. The sealing of the inner bead was not satisfactory, and subsequent diaphragms were therefore made continuous across the centre, where in each case support was afforded by the head of the piston.

A development of this displacer was tried, in which the diaphragm was 6 in diameter and reinforced by four plies of flat nylon cord. This was subject to puncturing and ply separation, however, and had a fatigue life of only 0.6 million cycles. A modified reinforcement was therefore developed, in which three plies were wrapped into a cylinder, with their cords at a small angle to the axis. One end of the cylinder was expanded by a balloon, until the cords were almost radial, and the diaphragm was moulded in this condition. This diaphragm had a life of 2 million cycles.

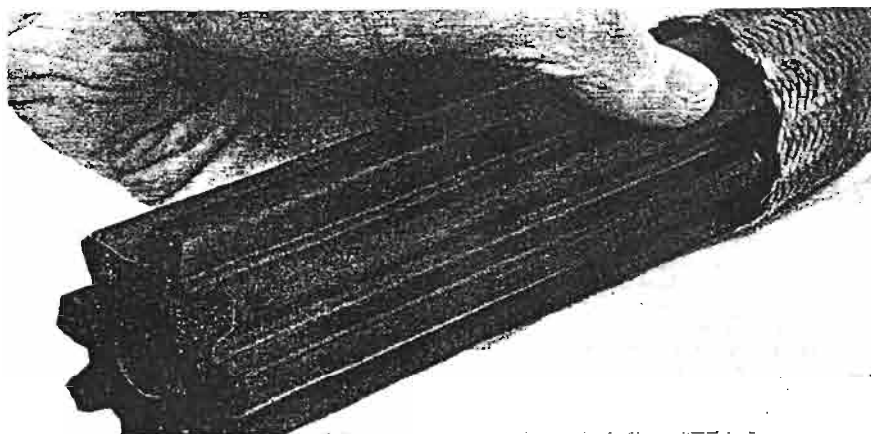
*Stage three, March 1957.* With stronger diaphragms, a change was made to higher working pressures, and consequently to displacers of smaller diameter. It is interesting to reflect that the pursuit of higher working pressure was a central theme of the Moulton development work, with the result that, today, production diaphragms are subjected to unusually high pressures with complete safety. To give burst protection to the diaphragm, a short, tapered, skirt was incorporated in the displacer housing, extending downwards from the annular groove in which the bead was clamped; the piston was given a conical form.

Concurrently, in an effort to make reductions in the space needed for the spring, a change was made to a central nitrogen spring contained in an 8 in diameter steel casing of oblate shape. Tests showed that this spring, although able to withstand 5 million working cycles, was unduly sensitive to changes of temperature; additionally, there was the feeling that a pressure vessel—particularly one situated close to the occupants of the vehicle—was a potential hazard in a collision, and the idea was abandoned.

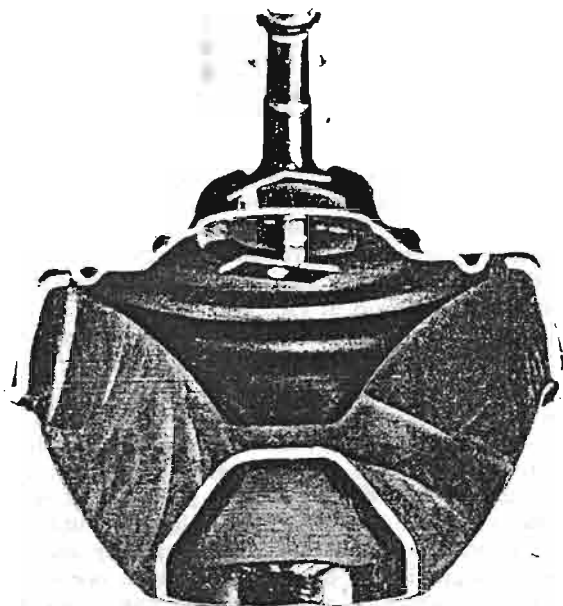
*Stage four, September 1957.* Hitherto, damping in the pitch mode had been afforded by the viscous flow of the fluid in its interconnecting pipes, and damping in bounce and roll by mechanical valves in the spring unit. These valves were, of course, not progressive in action, and their opening and closing produced perceptible shocks in the test cars. Accordingly, rubber flap-valve dampers were developed, and sited within the displacer units. These had the virtues of being silent in operation, more reliable than orthodox valves, able to cope with the inherently high displacements of fluid—because of their large port areas—progressive in action, simple to make, able to operate



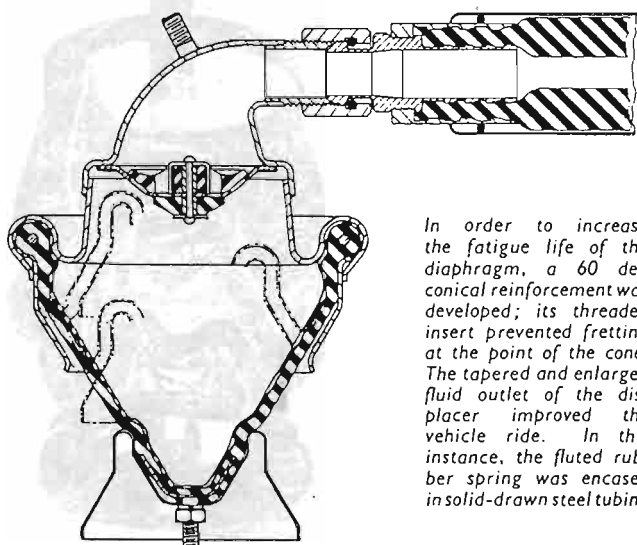
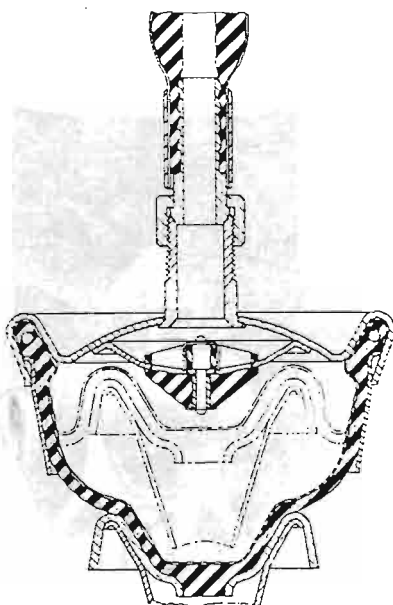
Above: Ride was greatly improved when rubber flap-valve dampers—suitable for the inherently large displacements of fluid—were adopted, and re-sited at the displacer units. For burst protection for the diaphragm, the tapered skirt was incorporated; the piston was also tapered. Here, the butyl rubber lining for the diaphragm can be clearly seen. Right: This rubber tube served as both a spring and an inter-connecting conduit. Increases of fluid pressure in the tube distended the flutes against the braided steel outer casing







Above: A rubber spring, of the type used on the ADO 15, was adapted for use as a displacer, but was found to have inadequate hydraulic stiffness. Rubber damper-valves were used. Right: For compactness, the piston of this diaphragm-type displacer was dished to allow room for the damper-valves, and the port-plate was welded to the roof of the housing. The spring used was the fluted rubber one



In order to increase the fatigue life of the diaphragm, a 60 deg conical reinforcement was developed; its threaded insert prevented fretting at the point of the cone. The tapered and enlarged fluid outlet of the displacer improved the vehicle ride. In this instance, the fluted rubber spring was encased in solid-drawn steel tubing

without lubrication, and of low cost. Wheel-hop, which occurred before the re-siting of the dampers, was obviated as a result of this modification.

To reduce space required for installation, the interconnection pipes were then used as tubular rubber springs: each pipe consisted of an outwardly fluted rubber tube surrounded by braided steel tubing  $1\frac{1}{2}$  in diameter. As fluid pressure increased with wheel deflection, the rubber tubing distended and its flutes were elastically compressed against the casing. This spring, however, was subject to abrasion and kicking, which caused the braiding to break up.

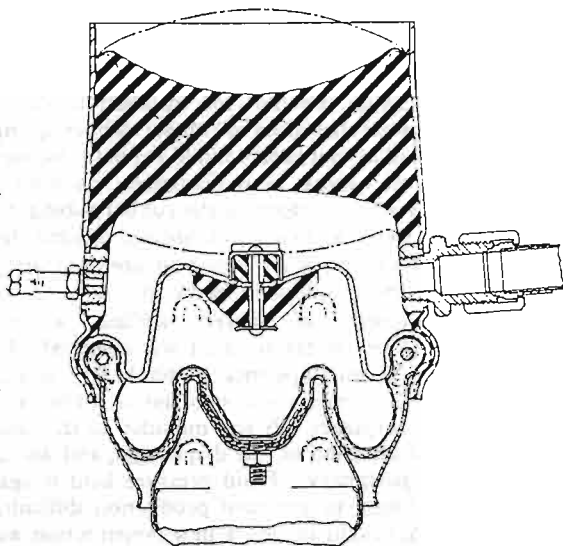
In the interests of perfect sealing, a diaphragm impermeable to the hydraulic fluid was essential. However, the production of an impermeable diaphragm was found to be unfeasible, so a separate liner of butyl rubber was incorporated in the displacer. It was moulded to the same shape as, but was not attached to, the diaphragm, and was similarly trapped at its periphery. Fluid pressure held it against the diaphragm. Owing to potential production difficulties with the type of diaphragm in use, a new construction was tried in which the reinforcement consisted of two semi-circular flat pieces of tyre cord ply wrapped into 60 deg cones, and placed one inside the other with the joints on opposite sides. There was no central bead, so the head of the displacer piston was dished in the centre, to locate radially the apex of the cone. The displacer unit could now be made more compact, since the dishing made room for the damper valves, which were mounted on a dished pressing; the piston was now a simple pressing. In fact, at the end of 1957, all of the main components in the displacer were pressings. Hitherto, normal experimental practices had been employed with consequent reliance on threaded, brazed and welded constructions.

*Stage five, February 1958.* A passing attempt was made to incorporate a simple Hydrolastic system in the smaller ADO 15 car, which was entering its final design stages. In this layout, a cone-type spring was used as a displacer, and a smaller version of the fluted spring was employed to augment the springing. Unfortunately, the cone spring had insufficient hydraulic stiffness, in that it became distended under hydraulic pressure; the rate of increase of fluid pressure bore no relation to the deflection of the displacer, and unreliable damping conditions were created. Consequently, the car went into production with mechanically operated rubber springs and dampers of the orthodox hydraulic type.

*Stage six, August 1958.* After experiments had been carried out with a development of the fluted spring—now encased by a solid-drawn steel tube—this line of investigation was abandoned. The extrusion of rubber tubing to the required dimensional accuracy was not feasible, and moulding was a forbidding problem. Additionally, accommodation of two long pipes of  $1\frac{1}{2}$  in diameter presented difficulties on a small car.

Meanwhile, the type of hydraulic fluid was being decided on. Among others, paraffin and brake fluid were examined, but the first was ruled out for its incompatibility with rubber, and the second because of its unsuitable viscosity characteristics and cost. During this period, a degree of harshness in the ride—experienced mainly over rough roads—was cured by enlarging and tapering the outlet of the displacer unit, to eliminate choking of the fluid discharge when wheel velocities were high. At about this time, a screwed insert was incorporated in the rubber moulding, to stop the point of the cone-type diaphragm fretting in the dished piston.

*Stage seven, December 1958.* Experiments were carried out on the damper flaps, to assess their stiffness and the ability of the rubber to resist being forced through the punched holes. When these were completed, the finalized



In this version, recognizable as a forerunner of the production unit, the spring was incorporated in the displacer housing; a bending weakness in the central portion of the spring was later revealed by fatigue testing. The curved profiles of the piston and skirt were developed to increase the life of the diaphragm. At one side of the canister was the fluid outlet, and at the other the charging valve for the system.

dampers were calibrated against orthodox units at Cowley, and fatigue tests began at Bradford. Initially, the damping practice was conventional, in that more damping was applied in rebound than in bump, but the production settings are now similar in both directions.

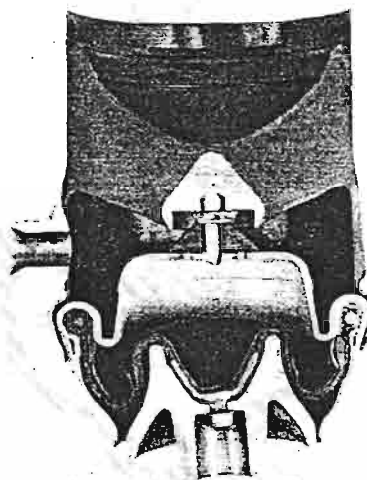
A rubber spring, of inverted dome shape, was incorporated in the upper part of the displacer unit, now tapered slightly, and the conduit tubing was changed to steel throughout, leading from a union in the side of the canister. By virtue of these changes, a slight harshness over small irregularities on the road was eliminated, for there was unrestricted flow of fluid to the spring. To help increase the life of the diaphragm, a study was instituted to develop the optimum profiles for the piston and skirt. The purely conical shapes gave rise to an unacceptably small radius of bending at the bottom of the stroke, and a large radius—with attendant circumferential strain—at the top. Eventually, profiles were developed to reduce the severity in these extreme conditions, and also to provide a smooth transition phase between the two.

—Final stage, June 1959 onwards. When it was found that the inverted dome-spring was weak in bending, a metal insert—first a solid cone, later a cup-shape pressing—was bonded into the centre of the rubber element; this modification, coupled with an increase in the degree of taper of the canister surrounding the spring, modified the stress distribution and raised the fatigue life of the spring from under 1 million to over 2½ million cycles. The union for the conduit was transferred from the side of the canister to the end of the pressing in the centre of the spring. By virtue of this move, the hoop-strength of the canister was improved, the opportunity was taken of shortening the unit, and a flexible hose—attached to a serrated projection on the outer cone—was interposed between the unit and the end of the steel conduit, which was now re-routed—this last modification considerably eased the problem of installation. The two-ply cone type of diaphragm was meanwhile giving good results on rig-tests, but it was felt that, because of the type of construction of the reinforcement, there would be difficulty, in production, of maintaining consistency in the spacing of the calendered cords during the moulding process.

However, the Dunlop Rubber Co, to obtain more uniform

spacing of the cords than was afforded in calendered plies, developed a technique of constructing the reinforcement from a single nylon filament, and the resultant diaphragm was found to have the required standards of strength, flexibility and fatigue life—over 2½ million reversals—together with excellent dimensional consistency. In the production of this member, a tube of longitudinally disposed strands is created by threading the continuous filament around the teeth of two coaxial, toothed wheels placed about 5 in apart. When one wheel is rotated relative to the other, a hyperboloid of revolution is formed, and removal of the wheels leaves a hollow casing of waisted shape, with a short parallel skirt at each end.

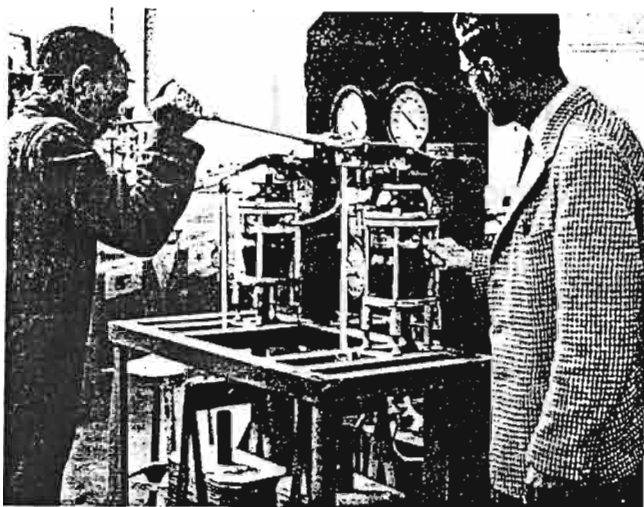
The inner bead ring is slipped over the end of the casing, to rest at the small-diameter portion, and one half of the casing is then folded back axially on the other, to enclose the ring and form a two-ply reinforcement of approximately conical shape, in which the spacing of the cords and the relative angle of the plies are extremely consistent. In the moulding of the diaphragm, the parallel skirt is wrapped round the outer bead ring, and a layer of rubber fills the central orifice. A combination of flexibility and unusually high strength in the diaphragm has been one of the most important factors in arriving at the final configuration of the Hydrolastic unit, for the remarkable and characteristic degree of compactness could be achieved only by using



The fatigue life of the spring was improved considerably by the inclusion of a metal insert. Although the cone-type diaphragm was still being used, potential production problems caused its abandonment.

The production unit. A cup-shape pressing replaces the conical insert in the spring, and the fluid outlet is in this pressing; the diaphragm incorporates two beading rings; to obviate metal-fatigue in the port-plate, the diameter of the plateau has been reduced.





*On this manually operated rig—built primarily for demonstration purposes, but found to be of use in development—the effective diameter of the bleed holes can be adjusted, and the operating behaviour of the valves can be watched. Bounce and pitch conditions in a complete Hydrolastic system are simulated by operating the levers in or out of phase, and fluid pressures at four points are registered on the dials*

much higher fluid pressures than were hitherto associated with diaphragm-operated mechanisms of comparable size. The production item withstands a static pressure of 2,000 lb/in<sup>2</sup>. During the arduous rig- and road-testing that followed the finalization of the design, a fatigue weakness was revealed around the punched holes of the port-plate; the gauge of the metal was therefore increased from 0.080 in to 0.104 in, and the diameter of the plateau portion was reduced.

The later prototypes of the Morris 1100 were subjected to the standard acceptance tests imposed on all B.M.C. vehicles of new design. This rigorous programme includes sustained running over the various rough surfaces at the M.I.R.A. proving ground and the Long Valley course at Chobham. Because of the high standards set during the development of the suspension components, no failures were experienced during these tests.

All of the rigs used in the dynamic tests were constructed in a manner such as to make dynamic creep of the rubber spring measurable, with the consequence that enough information on this subject was amassed to allow an accurate design factor to be introduced into the calculations relevant to the ride height of the vehicle. Static creep of the rubber was also assessed, of course. In addition, the impermeability of the butyl rubber liner for the diaphragm was appraised on a separate static rig. Over a period of 2½ years, it was found that any settling due to permeability could be ignored.

Clearly, in the interests of maintaining approximately equal ride height at all four wheels, the deflected height of Hydrolastic units must be held to close tolerances. During manufacture, the top of the canister is machined, to provide a tolerance of  $\pm 0.015$  in on the distance to the end of the piston rod. During this operation, the fluid pressure is held at 200 lb/in<sup>2</sup>, and a load of 2,000 lb is applied to the piston. On the vehicle assembly line, a novel method—protected by patent, as are most of the manufacturing processes used for the Hydrolastic system—is used to eliminate primary creep in the rubber springs. The Hydrolastic systems are pressurized for 30 min to about 400 lb/in<sup>2</sup>—which brings the suspension against its rebound stops—and then reduced to the standard static pressure, 205 lb/in<sup>2</sup>. By virtue of this technique, the springs have no opportunity of regaining the free state, as the weight of the car is applied throughout.

### Design features

Among the noteworthy features not already mentioned are the following:

- (1) Of the main metal components, all are pressings except the piston rod—a forging. The characteristic taper of some pressings is, of course, of benefit in the metal-forming process. All metallic components in the system are cadmium plated, primarily to enhance shelf-life.
- (2) Precision machining of the type associated with orthodox damping techniques is entirely unnecessary, and no lubrication is required during service.
- (3) No gaskets or sealing compound are needed in the assembly of the unit.
- (4) During the life of the vehicle, any settling attributable to secondary creep in the rubber can be compensated by restoration of the static hydraulic pressure.
- (5) Angular movements of the actuating rod are catered for by the flexibility of the diaphragm.
- (6) Because of the sturdy construction of the canister, the damper valves are extremely well protected; accidental dropping that might ruin an orthodox telescopic damper has no effect.

### Service considerations

Arduous testing on rigs and on the road have shown that no noticeable drop in the hydraulic pressure can be expected during a twelve-month period. Tests carried out during development have shown that instantaneous dumping of the hydraulic fluid—simulating failure—from one of the systems in a car travelling in a straight line calls for no correction in steering; both springs are affected to the same degree, and the car merely sags to one side, with movement restricted as the bump-stops are contacted.

Similar tests on a car travelling round a corner at limiting tyre adhesion caused no alteration of cornering behaviour: in this instance the fluid in the system on the side of the car remote from the centre of turn was dumped. The hazard involved cannot be compared to that incurred by failure of brakes or tyres. Gradual loss of pressure has no noticeable effect on handling or steering; however, it would appear advisable for users to have the pressures checked at least annually. Each B.M.C. main dealer will keep a small manually-operated portable pumping unit for the purpose of charging the system when such a pressure drop occurs, or when work on a car is sufficiently drastic to justify uncoupling a spring unit. The pumping unit consists of an exhaust pump to evacuate the air, and a hydraulic pump to inject the Hydrolastic fluid and pressurize it. During this operation, the transition from evacuation to charging is effected instantaneously by turning a three-way valve. Thermal expansion due to changes of ambient temperature in service does not give rise to any significant changes in ride height. However, vehicles exported to territories where extreme temperature conditions are experienced will have their pressures normalized on arrival at the distributors.

# FROM THE BACKSEAT

## **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell 03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

## **REGALIA OFFICER**

Mike Gilmour 047 81 8887  
Lot 57 Remembrance Drive  
Tahmor NSW 2340

## **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

## **PUBLIC OFFICER**

Vacant- applications sought  
about 2 hours per year !

## **EDITOR/ SECRETARY**

Daryl Stephens 03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

## **A.M.V.C. Sub Committee**

Pat Farrell as above  
Geoff Marshall 03 9877 1425  
19 Anne Street, Blackburn Vic 3130

## **SOCIAL CONVENORS**

*Brisbane*; Peter Jones as above  
*Melbourne*; Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489  
*Sydney*; Mike Gilmour as above

Opinions expressed within are not necessarily shared by the Editor or Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

# FOR SALE

1966 Mk 1 **\$59,000** miles Rusty doors one owner tan/ red car in Ballarat Vic Warren has the details [03] 9742 4788 \$2,000

1800 **Ute** Bullbar spotlights leather upholstery VGC **ALLISON** 015 075 055 \$3,000

1800 Mk 11 **offers** motor doesn't go- body fair Mathew QLD 3399 7316

1800 Mk 11 Auto GC no RWC Lyndall Edwards QLD 3356 7646

1800 Mk 11 **offers** Good Motor Mark Lutze QLD 3200 5068

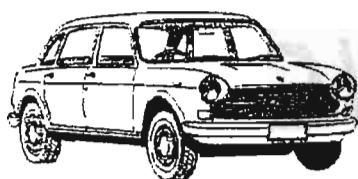
1800 Mk 11 **\$50** GC Little rust no reg Kevin Bull QLD 3344 3025

1800 **Mk 1 Ute** 10 Months reg paint sad little rust Linda Crawley Frankston [03] 9789 8695 \$2,000 or similar build number **553**

X6 or 1800 crown wheel and pinion **18/ 67 Or 3.7** Bill Stevenson 0419 436 914 Orange NSW **\$200** Also an unused re coed 1800 head **\$170**, and a Mk 11 short motor with new 40 thou oversize pistons \$650

1800 Mk 11 **Freebie** Langwarren Vic Simon 9775 7077

Paul Busst **Wangaratta Vic 057 21 2447** has 2 Tasmans, a couple of 1800 s ( Sedans and Utes) Marina's and lesser vehicles to give away.



# LANDCRAB

## CLUB OF AUSTRALASIA



Number 73 April and May 1997

In an effort to ensure that mobile phones bring more good than evil to club members, Ken Patience has compiled this mobile phone *book of etiquette*, where the often subtle do's and don'ts of mobile use are explained.

1 You rush out of a meeting to use the toilet. You're just getting comfortable when the phone rings. Your mobile phone. In your pants pocket. Somewhere around your ankles. So, if you must take your mobile into the toilet, *don't* forget to turn it off.

2 You're flying from Sydney to Melbourne on business. The pilot has announced that mobile phones will interfere with the navigation system. That's all well and fine you think, but if I don't call the office, I'm dead. You make the call. Everything is OK. Until the plane lands in Brisbane. So when flying, do follow the pilots instructions.

3 You win a golf day with Greg Norman. Greg's up first. He begins his swing when **RIINNGGG** - your mobile breaks the silence. Mr Norman then decides hitting your mobile would be more fun than hitting a ball. So do remember there are times when its best that you simply *cannot* be reached.



4 You're having lunch. You discuss a private business deal on your mobile between courses. The next day you read all about your deal in the morning papers. Woops. So *do* be aware of how loud you talk when using your mobile.

5 You're walking down the street when your phone rings. You take the call and continue walking - straight into a plate glass window outside a packed restaurant of rather amused patrons. So when walking and talking, do watch where you are going.

6 You're having dinner with friends There are 4 mobile phones on the table. Suddenly one of them rings. You instantly grab your phone. Woops. Yours wasn't the one ringing. So don't appear too eager. Someone will call...really.

# INTRODUCING

Neil Cameron	Box 64 Albany W.A. 6331	[098] 448 358	Mk 11 1800
John Elsol	28 Dema Street Sunnybank QLD 4109	[07] 3344 1989	Mk 11 1800
Peter Paige	126 Monbulk Road Emerald Vic 3782	[03] 596 84767	Mk 11 1800
Mary Baird	34 Culzean Crescent Highton Vic 3216	[03] 524 38154	Mk 11 1800

We now have **132** fellow nutters in our club !

## FROM THE BACKSEAT

### **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell                      03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

### **REGALIA OFFICER**

Mike Gilmour                      047 81 8887  
Lot 57 Remembrance Drive  
Tahmor NSW 2340

### **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

### **PUBLIC OFFICER**

Vacant- applications sought  
about 2 hours per year !

### **EDITOR/ SECRETARY**

Daryl Stephens                      03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

### **A.M.V.C. Sub Committee**

Pat Farrell                      as above  
Geoff Marshall                      03 9877 1425  
19 Anne Street, Blackburn Vic 3130

### **SOCIAL CONVENORS**

*Brisbane;* Peter Jones as above

*Melbourne;* Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489

*Sydney;* Mike Gilmour as above

Opinions expressed within are not necessarily shared by the Editor or Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

Cut off date for inclusion of articles in the newsletter is the 25 th of the even month. Publication date attempts to be 25 th of the odd month .

# FACT SHEET

## SUPERCHARGER versus TURBOCHARGER

### IN VEHICLE APPLICATION

The following facts are a summary of a technical paper produced for the automotive industry in which the efficiencies of both Supercharging and Turbocharging were assessed. Obtaining the maximum engine power output over a wide operating range while meeting emissions, fuel economy, packaging, cost and driveability standards has been objective of most engine development efforts. With the coming of the fuel crisis and the attendant vehicle down sizing programs, the use of forced induction has been a popular method to increase downsized engine power while increasing fuel economy and in essence meeting the strict emission legislation set down to see out this century. For this comparison all reference has been made to a standard screw type Supercharger and a standard iron turbine type Turbocharger.

### ENGINE RESPONSE

#### TURBOCHARGER

The Turbocharger does not reach its maximum efficiency range until high speed and airflows are achieved later in the vehicle acceleration event. The latest Turbochargers with variable geometry housings and ceramic turbines still take four times as long as a positive displacement Supercharger to produce maximum boost.

#### SUPERCHARGER

The Supercharger is continuously driven at full boost speed for the given engine speed. This offers almost immediate boost response which takes approximately 0.4 of a second to produce 50 KPA boost.

### EFFICIENCY

#### TURBOCHARGER

Turbocharger airflow delivery characteristics do not match the requirements of the internal combustion engine because of the volumetric efficiency versus speed difference. Turbochargers only display efficiency over a limited flow range. Turbo systems must be compromised to provide some low speed boost while matching high speed flow requirements. This usually requires wastegating which reduces maximum power.

#### SUPERCHARGER

The Supercharger exhibits an airflow delivery characteristics very close to the engine requirement. Thus, boost remains almost constant over the total speed range without wastegating or other compromising control systems.

### NOISE AND DURABILITY

#### TURBOCHARGER

With Turbos driven by exhaust gases turbine noise is nearly eliminated. Durability cycles are affected by the extreme temperatures that the turbine and housings are subjected to, leading to fatigue and inevitable failure.

#### SUPERCHARGER

Supercharger noise along with durability concerns have been the expressed reservations associated with automotive use. With improved designs and advanced materials noise levels have been reduced considerably with durability cycles proven well in excess that of Turbochargers.

### LUBRICATION

#### TURBOCHARGER

Turbochargers are subjected to extreme temperatures and in "shut down" situation the oil remaining in the turbine bearing sections will reach coking (burning) temperatures. The carbon build up in the engines lubricating system will accelerate the internal wear of the engine and add to the rapid deterioration of the oil.

#### SUPERCHARGER

Superchargers can be lubricated by self-contained systems which without the extreme heats experienced by Turbochargers will last for periods well in excess of the engine lubricants.

### AFTERCOOLING (INTERCOOLING)

#### TURBOCHARGER

Turbochargers again are subject to extreme temperatures and discharge temperatures need lowering through aftercoolers if high performance levels approaching that of Superchargers are to be reached.

#### SUPERCHARGERS

Superchargers do not require aftercooling as outlet temperatures rarely exceed 140 degrees C.



## **DRIVEABILITY**

### **TURBOCHARGER**

Unlike a direct coupled Supercharger, performance is only enhanced in proportion to turbine speed. Therefore performance at low speed is limited and a distinct pause is encountered under acceleration known commonly as Turbo lag.

### **SUPERCHARGER**

Performance is obtained without sacrificing the practical and constant rate in which this torque is delivered. Towing and Off-Road-4-Wheel Driving can benefit greatly from the increased torque at low speeds.

## **EXHAUST EMISSIONS**

### **TURBOCHARGER**

Turbochargers can be tailored to meet emission levels at normal operating temperatures but suffer on cold starts. Contrary to the heat generated by a Turbo the exit gases are still low and on cold starts results in a longer catalytic light up time. This results in unacceptable levels of exhaust emissions at engine start up and legislation is slowly reducing the light up period available which will create problems for Turbochargers.

### **SUPERCHARGER**

With legislation increasing pressure on automobile manufacturers to generate clean running engines Superchargers can easily be tailored to suit engine manufacturers emission designs.

## **VEHICLE MODIFICATIONS**

### **TURBOCHARGER**

A Turbo becomes an integral part of the exhaust system, therefore requiring major modification to the standard exhaust. This also is the single limiting factor dictating its position in relation to the inlet manifold. Additional pipe-work can be required to reach air cleaners and inlet manifolds when mounted on the opposite side of the engine. If an aftercooler is incorporated the potential piping requirements can become impractical. Turbochargers fitted to some vehicles need to be insulated with a heat-shield lagging to protect under-bonnet-components from the extreme temperature generated. Brake master cylinders have been known to melt in a Turbocharged vehicle which raises other problems. Internal modifications are required in some cases such as compression modifications to accommodate the hot delivery air of the Turbocharger. Early opening of the exhaust valve will allow a high blow down pressure giving smaller engines more drive pressure from its exhaust but does sacrifice engine efficiency at cruise due to loss of full gas expansion.

### **SUPERCHARGER**

A Supercharger need not change the physical configuration of a motor vehicle. A Supercharger is fitted where convenient by brackets and drive belt. Standard air cleaner and exhaust stay intact. No internal modifications to engines are required as the extra boost delivered is at a moderate temperature and which reduces the chance of detonation. No heat shielding is required for under-bonnet-components as again operating temperatures are low. No excessive plumbing required as Superchargers do not require aftercoolers and the unit can be mounted near the intake manifold requiring only a short discharge pipe.

## **MARKET TRENDS**

### **TURBOCHARGER**

Manufacturers have worked with or around the inherent problems of Turbocharging in the pursuit of performance, economy and emission controls. Now with other options available Turbocharging is becoming less important to many vehicle manufacturers.

### **SUPERCHARGER**

Supercharging is becoming more widely accepted by original equipment manufacturers and different forms of Supercharging are now appearing on new vehicles.

## **SUMMARY**

In the past Turbocharging has been an accepted means of increasing engine performance. Even with its inherent problems it was the most cost effective method of forced induction.

Now with improved manufacturing techniques and high volume production Superchargers can now not only offer better performance and packaging characteristics but can also now be price competitive.

## **REFERENCES**

1. Adams, T.G. "Comparison of a Turbocharger to Supercharger on a spark ignited engine". SAE Paper 841285 1984.
2. Singer, D.A. "Comparison of a Supercharger vs a Turbocharger in a small displacement gasoline engine application". SAE Paper 850244 1985.
3. Wark, K. "Thermodynamics", fourth edition, McGraw Hill Inc. 1983.
4. Uthof, L.H. "Supercharger versus Turbocharger in vehicle applications" SAE Paper 870704.





This ex-works BMC 1800 'Landcrab', SMO 226G, finished second on the 1968 London-Sydney Marathon, crewed by Paddy Hopkirk/Tony Nash/Alec Poole. Apart from losing one of its roof-mounted spare wheels and some side decals, it looks much the same today (left) as it did on a pre-marathon publicity appearance at Thruxton 25 years ago (below)

# LANDCRAB WISE



BMC's 1800 'Landcrab' made an unlikely works rally car in 1967-68, but Graham Robson relates how it won its first event and very nearly did the same on its last, the London-Sydney Marathon

**J**ust because a works rally car scored some results, it doesn't mean that it was a good car. BMC's 'Super Landcrabs' – the Austin/Morris 1800s of the late 1960s were perfect examples.

On the face of it, you would have said in 1967 that the BMC 1800 was never likely to be a successful rally car, and if you were a cynic you would have added that BMC was wasting its time trying to prove otherwise. The standard car was too big, too heavy, too slow – and there was no homologation special version to improve its potential.

But in the 1960s, what went out as a works rally car was not always aimed at total success. Directors sometimes wanted to see unfashionable models used, and no amount of reasoning from the team would convince them otherwise. Those were the occasions when expert team managers either had

to smile grimly, take the money and run the cars – or resign.

At first glance the BMC 1800 looked *very* unpromising. Yet in a short career the cars won one major international rally, and Paddy Hopkirk's car came within six minutes of winning the London-Sydney Marathon of 1968.

Even in 1967, when a proper works 1800 first appeared on a rally, it was an incongruous sight, but there were two factors in its favour. One was that it had front-wheel drive, and the other was that the works cars were prepared at Abingdon, which was probably the world's most resourceful competitions department of the period.

Even so, 1800 drivers needed a sense of humour – and a great deal of strength – to get the best out of their machines. Not for them the tyre-stripping acceleration of a Big Healey or an Escort Twin-Cam, or even the

'this-will-get-me-out-of-anything' cornering poise of a Mini-Cooper S. Rallying an 1800 needed the ability to get to grips with a bulky machine and the determination to keep going, at all costs. And in those days, don't forget, there wasn't any power-steering...

Let's look at the facts and figures first. When the BMC 1800 was launched, it was a 2535lb car with 84bhp and a single-carb overhead-valve engine. Ford's rally car of the day, the Lotus-Cortina, was the standard-setter, a 1920lb car with 105bhp, and a twin-cam engine with two twin-choke carbs. Even in standard form that gave the Ford an overwhelming power/weight ratio advantage at 122bhp/ton instead of 74bhp/ton. Not only that, but in fully-tuned Group 2 form a Lotus-Cortina had up to 150bhp, while a single-carb BMC 1800 struggled to reach 100/105bhp.



BMC's five-car assault on the London-Sydney Marathon required extensive behind-the-scenes support. Pictured in Afghanistan, SMO 223G was a specially-prepared service car which shared many of the mechanical tweaks of the rally cars

thanks to the Hydrolastic suspension.'

What is interesting, here, is that wherever the works drivers had a choice on their Mini-Coopers, they invariably ditched Hydrolastic in place of the older 'dry' suspension, but in the larger chassis of the 1800, which had longer-travel suspension, Hydrolastic seemed to work much better. This, more than any other factor, turned it into a durable, if not a sensational, car.

The first event chosen for the 1800 to run as a fully-fledged works car was the Danube Rally of 1967, a European Championship round which was sponsored by Castrol. It was no coincidence that Stuart Turner, who had left BMC earlier in the year, was then employed in the publicity department of Castrol! His successor at BMC, Peter Browning, realised that there was no way the 1800 could be competitive in anything approaching standard form, so he entered the old black development car in much-modified (Group 5) form instead.

## MODEST BEGINNINGS

The original 1800, badged as an Austin, had been launched in October 1964, and in January 1965 two Abingdon-prepared cars appeared on the Monte Carlo Rally. Not for superstars like Timo Makinen or Paddy Hopkirk to drive, but on a more modest 'loan basis' to media entrants. One was driven by Tommy Wisdom (of the *Daily Herald*) and Courtenay Edwards (of the *Sunday Telegraph*), with John Sprinzel on hand to liven up proceedings, while in the other were Ray Joss (an ITV producer) and racing driver John Fitzpatrick.

Perhaps it was expecting too much for these cars to shine on their first attempt. The only publicity gained was when one crashed with severe brake fade, so nothing more was done for the next two years.

Then, in mid-1967, as Bill Price recalls in his book *The BMC/BL Competitions Department*: 'The success of the two Austin 1800 cars on the 1965 Monte [Success? Well, it all depends if you consider 29th and 31st overall to be successful] had prompted Longbridge to look at ways of improving the image of the model. We had done a bit of

development work on an old Longbridge development car (LRX 824E) and this had been loaned to Bob Freeborough to do some national rallies to see how it would perform. Much to everyone's surprise he won the Moss Tyres Rally and had come second in another event which inspired some confidence in the car. It was down on power compared with most of the competition, but had the ability to travel very quickly over rough roads

Seventy miles into the London-Sydney, only 17,000 miles to go. Sitting at Dover during the evening of 24 November are the cars of second-placed Hopkirk/Nash/Poole (51) and fifth-placed Aaltonen/Liddon/Easter (61), with one of seven private 'Landcrab' entries behind



One of the works London-Sydney 1800s was crewed by Australians, Evan Green/'Gelignite' Jack Murray/George Shephard, but slumped to 21st place at the finish after loosing over four hours with a seized wheel bearing during the final leg across the crew's home country





The second-placed 'Landcrab' bounces through the Australian outback. The 1800s struggled to keep up with the leaders on this flat-out final section, but the Hopkirk/Nash/Poole car gained places after the retirement of Clark's Lotus-Cortina and Bianchi's Citroën

Although attempts were made to take a little weight out of the car, the main change was to turn the engine into a transversely-mounted equivalent of a Stage 6 MGB unit which, at a stroke, gave 135bhp in place of 84bhp. Tony Fall, who had driven in a previous Danube Rally, was invited to drive the car, which made a change from the Mini-Cooper 1275S in which he had just won the Geneva Rally outright.

Happily for BMC the Danube Rally featured loose-surface stages in the mountains of Rumania, which suited the 1800. In theory it should have had no chance, for there were many fast cars in the entry, including Sobieslaw Zasada's Porsche 912 and no fewer than six five-speed Renault Gordini 1300s, but the 1800 was more reliable than the other machinery (and its crew made no mistakes), so to almost everyone's surprise it won the event, narrowly beating Vinatier's Renault.

It was an amazing maiden outing which, on reflection, meant that everyone now expected too much of an 1800 whenever it appeared.

The same car was then re-prepared for Brian Culheth to drive in the French Alpine Rally, on that occasion an all-tarmac event with extremely high target average speeds which terrified everyone. Once again, no-one seriously expected the car to win anything, especially as many of the special tests were steep and twisty hill climbs: where Paddy Hopkirk's 1275S took 14min 26sec to climb the Col d'Allos, Culheth was more than 2min slower. But in the same 'front-wheel-drive MGB' tune it kept plugging on,

eventually winning its class and finishing 11th overall. Nothing remotely as mundane as an 1800 was ahead of Brian, the majority being highly-tuned homologation specials.

In the same month BMC sent another 1800 to gather a basketful of International endurance records at Monza. Once again a full-house engine tune was used (which proved the reliability of the assembly), and a very non-standard car duly droned around for seven days and 15,000 miles.

The last major challenge of the 1967 season should have been in the RAC Rally, but as every rally enthusiast surely knows, this event was cancelled at the last minute, because of an outbreak of foot-and-mouth disease.

## SAFARIS AND MARATHONS

The big change for BMC came in January 1968, when the company was absorbed into the new British Leyland combine, and it soon became clear that

Leyland's Lord Stokes was not a great fan of motorsport – not, that is, unless he could be sure of winning before he spent his money! Peter Browning and his colleagues knew that the Ford Escort Twin-Cam was on the way, and were worried that their operation would be closed down, or at least refocussed: later in 1968 their worst fears would be confirmed.

Even so, Lord Stokes was not closely involved with the decision to use 1800s on long-distance events like the Safari and the London-Sydney Marathon, although there was a great deal of pressure from sales and marketing departments to encourage this policy.

The 1800's 1968 season began on the Monte, where a new car was prepared for Culheth in Group 2 tune. This meant that it ran with only a single 21 SU carburettor, and had no more than about 110bhp. The Special Tuning Department prepared two semi-work cars for John Sprinzel (LOF 238F) and

Two 'Media' entries gave the unpromising 1800 its rallying debut in 1965 on the Monte, where Tommy Wisdom/Courtenay Edwards/John Sprinzel in AOB 987B finished 31st overall







The 'Red Arrows' entry finished 19th overall on the London-Sydney: drivers Kingsley/Evans/Bell were all members of the RAF's famous flying display team

Peter Jopp (LOF 179F) to drive. It was another of those occasions where the 'Landcrab' could fight in its class, but had no chance of outright victory.

As it happened, the weather was mild, and many of the special stages were clear, so the 1800's good handling and traction could not make up for its lack of power.

At the end of the event, in which Culcheth had driven his heart out, the 1800 finished 24th; it was beaten in its class by Ove Ericsson's Opel Kadett.

More, much more in view of the expense, was expected of the 1800s in the East African Safari. As far as BMC was concerned, the Safari was a real challenge to them, as they had never before had a car which was remotely competitive in the African bush. In those days the Safari was an event strictly for Group 1 and Group 2 cars, which meant that a Big Healey had never been eligible, and a 1967 Mini-Cooper S entry for Rauno Aaltonen had been a total failure.

Even though the 1800, in Group 2 form, would not be fast, BMC at least hoped that it would be reliable, and a team of three cars was sent out to Nairobi, to be driven by Rauno Aaltonen, Tony Fall and Timo Makinen. Although this was to be a wet Safari, the team was confident, after a lot of testing and practice.

In the early hours after the start from Nairobi, things looked promising, with Aaltonen up in third place, but everything went wrong after that. Makinen's car broke its oil cooler and ruined the engine, Fall's broke a cast-alloy front suspension housing, and

finally Rauno's suffered the same failure. Before the rally had even reached the half-way point in Nairobi, all three works cars had been eliminated.

In the next few weeks, Culcheth took a brand new car to Greece, where the rough roads of the Acropolis Rally attempted to destroy it. A ten-minute

delay due to the car having a puncture in a muddy section didn't help, so tenth place behind all the works homologation specials (Escort Twin-Cams, Fulvias, and Porsches) was the best that could be expected.

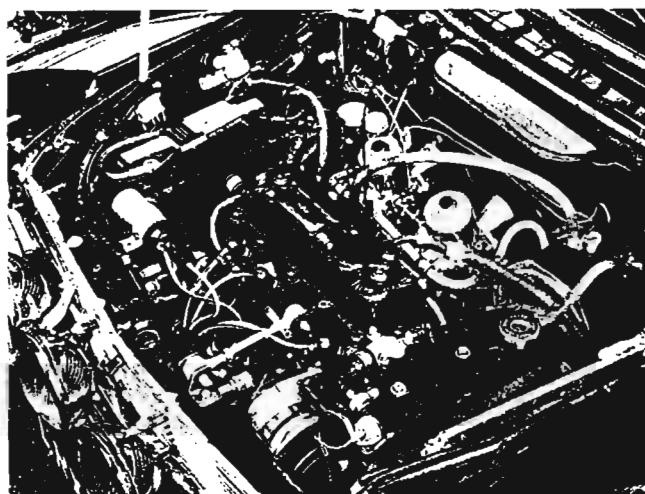
A few days later, Tony Fall (with a local co-driver, Denis Johnson) tackled the Canadian Shell 4000 Rally, which

**Preparation for the 1800s' busy 1968 season, which included outings on the Monte, Safari and Acropolis, involved putting the ex-Danube recce car through its paces over army test tracks at Bagshot. Timo Makinen is the driver at lift off**



**The 1968 Monte 1800 at Brands Hatch a few days after the event, demonstrated by HR&R's editor, then on Safety Fast at Abingdon, who later bought the test car, above, for £275 with the Monte car's engine and ran it as a road, rally and autocross car modified to stage 6**





Detail views show the front suspension with its adjustable tie rod (above left) and transverse four-cylinder engine in 135bhp stage 6 tune (above right). Three of the five-car works entry at a service halt on the London-Sydney (right), with the Aaltonen/Liddon/Easter car prominent



started from Calgary and finished, six days and 4000 miles later, in Halifax, Nova Scotia. It was an event in which there were high-speed special stages, but in which navigation accurate to the second was also needed, the marking ensuring that almost any car had a chance of success.

I attended this event, noting that, 'Tony Fall had the red-and-white 1800 which Brian Culcheth had driven on the Monte – but mysteriously its registration number had changed in the meantime...'. That remark, by the way, reminds me yet again that modern-day enthusiasts place far too much emphasis on registration numbers. Then, as later,

## THE WORKS BMC 1800s

Year	Event	Crew	Result
<b>1965</b>			
January	Monte Carlo	Tommy Wisdom/Courtenay Edwards/John Sprinzel (AOB 987B) Ray Joss/John Fitzpatrick (DJB 94B)	31st Overall Accident
<b>1967</b>			
July	Danube	Tony Fall/Mike Wood (LRX 824E)	1st Overall
September	Alpine	Brian Culcheth/Johnstone Syer (LRX 824E)	1st in Class
November	Monza record run	Six drivers (LBL 416E)	Class E endurance records up to 7 days, 25,000km
	RAC	Brian Culcheth/Johnstone Syer	Event cancelled
<b>1968</b>			
January	Monte Carlo	Brian Culcheth/Johnstone Syer (KOC 391E)	2nd in Class
April	East African Safari	Rauno Aaltonen/Henry Liddon (KOC 391E – new car built for event) Timo Makinen/David Benzimra (ORX 661F) Tony Fall/Lofty Drews (ORX 662F)	Retired Retired Retired
May	Acropolis	Brian Culcheth/Mike Wood	2nd in Class
June	Canadian Shell 4000	Tony Fall/Denis Johnson (ORX 663F – was KOC 391E on Monte)	2nd in Class
December	London-Sydney Marathon	Paddy Hopkirk/Tony Nash/Alec Poole (SMO 226G) Rauno Aaltonen/Henry Liddon/Paul Easter (SMO 225G) Terry Kingsley/P. Evans/D. Bell (ORX 663F) Evan Green/Jack Murray/George Shephard (SMO 227G) Tony Fall/Mike Wood/Brian Culcheth (SMO 974G)	2nd Overall 5th Overall 19th Overall 21st Overall 23rd Overall

the registration number was merely a convenience item. (*The Monte car's number was changed so it could take on Austin identity, Morris not being sold in North America. The Monte number went on to a new Morris for the Safari - Ed.*)

On the rally across the prairies of Canada, and through the sandy wastes of the eastern seaboard, Tony was as exuberant as ever, rolling the car (on an easy road section!) on the second day but carrying on undaunted. By driving the lumbering 1800 flat out on the eight special stages he eventually finished seventh, and second in his class to a Datsun 2000.

All this, though, was merely a build-up to BMC's big effort of the year - a five-car entry in the first-ever London-Sydney Marathon. As far as Abingdon, Peter Browning and Bill Price were concerned, there was only one BMC car to take on the event - the 1800 - which delighted British Leyland's marketing department. Every rough event tackled earlier in the year was meant to shake all possible bugs out of the specification for this extravaganza.

## LONDON-SYDNEY

The team had started testing as soon as the decision to enter had been confirmed, with cars which never came near to tackling a rally on their own. Testing, by the way, didn't mean developing the fastest and best-handling car, but making sure that the machines would be as solid and unbreakable as possible, and would last the full four weeks, and would go half the way round the world. As the eventual winner, Andrew Cowan, has insisted on so many occasions since, everyone knew that the Ford Lotus-Cortinas would set the pace, and be the hares. The tactics of Rootes and BMC were to produce unbreakable tanks, to be the reliable tortoises which would be in with a chance at the finish.

There were four brand new cars - for Aaltonen, Fall, Hopkirk and Evan Green to drive - while a 'Red Arrows' team (each crew member being a member of the RAF's famous display flying team) were given Fall's ex-Shell 4000 car (or should we say the car carried the same registration number?).

BMC prepared and tested as never before. Testing had already been carried out at Bagshot ahead of the Safari, and more work was done during mid-summer. A brand new Morris-badged recce car (RMO 723F) started a route survey in July, and was crewed by Paul Easter, Henry Liddon and Tony Nash. The tale of that recce would make an article in itself: there were Hydrolastic unit breakages, oil coolers splitting, a blown cylinder head gasket, and a piggy-back ride on a truck full of onions!

For the event itself all the cars ran in twin-SU engine tune, this time de-rated to give only 100bhp, and the decision was also taken to send three-man crews. There was special attention to the third crew member, with a bed as far as Bombay, and then a special individual seat for the Australian sprint.

The 1800's reputation in motorsport might have been slim at that point, but it was enough to encourage a number of private entrants - seven in all - to prepare their own examples too.

In its preview of the event, *Autosport* wrote: 'A fast car driven slowly will win, with 40 cars making the boat at Bombay, and half a dozen to the finish in Sydney'. As it turned out, a slow car driven flat out was to win, and the organisers were almost caught out by the large proportion of the entry which kept struggling on!

By the time the Marathon reached India, it was clear that the doom-and-gloom merchants had been completely wrong. When the rally cars were loaded on to the good ship *SS Chusan* in Bombay, all five of the BMC 1800s were still running strongly, with Hopkirk fourth and Aaltonen fifth.

At Erzincan Paddy's and Rauno's 1800s each lost 17 minutes, Fall was 20 minutes down, and Evan Green dropped 22 minutes. Fast cars driven fast were the answer at this stage, and BMC's 'let's build a tank' philosophy took a knock before the Kabul control when Tony Fall lost a further 30+ minutes after his car broke a front suspension member.

But as the cars were lifted off the boat at Fremantle, in Western Australia, BMC were happy to see all their cars running, though depressed by their lack of pace against the flying Fords.

## AUSTRALIA, WEST TO EAST

During the three-day sprint across Australia, Hopkirk's 1800 scrambled its way to the front, and came within six minutes of winning the world's most heavily publicised rally.

Although the 1800s suffered few mechanical breakdowns (and none of them went off the road), positions shuffled considerably in the next few days. Hopkirk's car broke its steering (and lost 14 minutes) before the Lake King control, which meant that he was down to eighth, and at Quorn, Rauno was fourth, 11 minutes behind the leader, with Paddy still struggling in seventh place. By this time the Australian driver, Evan Green, had lost more than four hours after a wheel bearing had seized.

The Edi to Brookside section saw another reshuffle, for Paddy was only three minutes late, and was suddenly equal fifth with Rauno. One control later Rauno had dropped back by 13 minutes due to a navigational error, and everyone knows what happened in the last 100 miles.

Paddy made a superhuman effort to be the only driver to 'clean' the 42 minute Numeralla to Hindmarsh Station section, and clawed his way up to third place, which became second when Bianchi's leading Citroën suffered an accident. Aaltonen never made up for that navigational mistake, and finished fifth, a further nine minutes away.

The other three works 1800s also made it to the finish, with the Red Arrows car (266 minutes penalty) in 19th place, Green (332 minutes, 230 of them due to the seized wheel bearing) 21st, and Fall (430 minutes, 344 of them before Bombay) in 24th place.

All in all, this was a marvellous performance by overweight cars. Lord Stokes, however, was said to be disappointed that his cars had not won, and once all the bills had come it was clear that the ongoing rally effort would soon be run down.

The result was that after the cars were shipped back from Australia they were immediately retired, or sold off. No works 1800 ever tackled an event again. □



**Second-placed Hopkirk/Nash/Poole stir up the dust on the Australian section. Some works teams tackled the London-Sydney with two-man crews despite worries about fatigue, but all the works BMC 1800s carried a third man in the rear**

# IN THE BEGINNING . . .

## Spencer Hall talks to Chris Kingham

AT the 1994 LOCI National Rally — held at Ragley Hall near Evesham — I was strolling around the 30 or so cars on display when my attention was drawn to a gentleman of around 70 years old who was also quietly examining the assorted Austins, Morrisises and Wolseleys.

He didn't fit the standard profile of an "average" LOCI member so I casually enquired where his interest in the 1800 lay. He replied, in an equally casual tone: "I was the Project Engineer." Ah! I had never met Chris Kingham, LOCI President, before and was unaware of his pivotal role in the development of the ADO17 as it was known in 1961 — by the end of the day, however, I would be suitably enlightened.

It's very rare that the average consumer has an opportunity to meet the designers of mass produced products they use every day. Most products these days tend to be committee designs because of the high capital stakes involved. Can the design of the Audi A6 or Renault Espace, for example, be attributed to just one or two key people? Is there a Helmut A6?!

Anyway, back to Ragley Hall — immediately about two dozen questions bubbled up

making it difficult to know what order to ask them in. First off — why did they set out to produce a car with such high torsional rigidity? The short answer was that they didn't, but the reason is much more compelling.

The initial success of the Mini in 1959 encouraged the BMC Board to authorise the development of a whole family of transverse-engined, front-wheel-drive cars. The 1100 was launched in 1962 and the 1800 made its debut at Earl's Court in October 1964, but the design process started three years earlier in 1961.

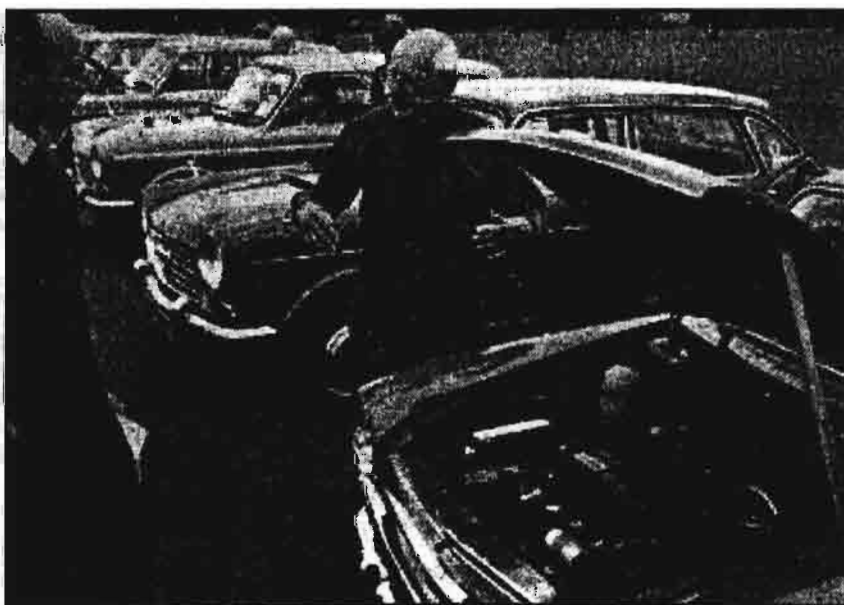
The Design team at Austin was divided into three Project Cells working under the direct leadership of Alec Issigonis, the Technical Director. The first Cell to be set up handled the design of the Mini, the second covered the 1100/1300 range and Chris Kingham broke away from the Mini Cell to head the 1800 project.

The main Design Office continued to operate during this time, handling the design requirements of the existing and previous model range.

Alec Issigonis sketched out the basic design of the 1800 defining the space between engine and passengers. When it came to the design of the engine mountings Issigonis pro-

posed a separate subframe as employed on the Mini and 1100.

Chris Kingham was less keen on the idea, pointing out that the cost of making a separate subframe resulted in both a weight and cost penalty. The bodysell had to be reinforced at the attachment points to prevent the subframe being wrenched out of the



*Chris Kingham (right) enlightens Spencer Hall.*

**CONTINUED OVER**

shell in adverse conditions. Why not just reinforce the bodyshell and hang the engine and suspension directly from this structure?

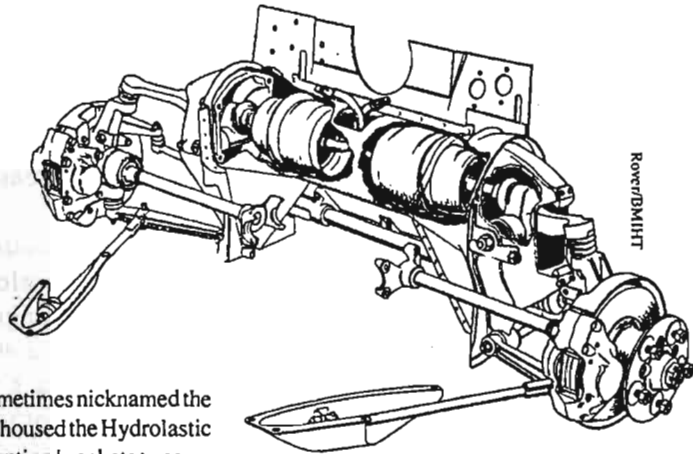
Various designs were discussed and the team came down in favour of a simple transverse cylindrical tube (sometimes nicknamed the "Drainpipe" — Ed) which housed the Hydrolastic displacer units, with mounting brackets to carry the engine and steering welded to the outside. The tube was placed at the front of the main floorpan and became an integral part of the bodyshell.

Because the tube had to carry the engine and steering gear it had to be very strong but the weight penalty was negligible and it's a lot easier to manufacture a three-foot tube than to press and assemble two dozen bits of steel plate into a complex subframe!

The end result was that the car enjoyed tremendous torsional rigidity as an integral part of the design from the floorpan up. There was no deliberate attempt to produce the world's stiffest vehicle — it just happened that way. Remember that in 1961 the world had not yet been widely introduced to the "wonders" of the now ubiquitous Macpherson Strut.

I also asked whether there was any truth in the rumour that the thickness of the metal panels had been increased to overcome ripples when the steel sheet came out of the presses. "No," replied Chris.

The next question concerned the rear "winglets" featured on the Mk1 cars and all Wolseleys. Apparently the initial designs of the boot and rear end mimicked the front wings with a gradual curve but this gave the appearance that someone had sat on the boot and then slid off!



**ABOVE:** The secret of the Landcrab's rigidity ... the "Drainpipe" a massively strong tube which houses the displacers and also carries the suspension, engine and steering.

**The initial designs of the boot and rear end mimicked the front wings with a gradual curve, but this gave the appearance that someone had sat on the boot and then slid off!**

Pininfarina (BMC's then favoured stylist — Farina-bodied Morris Oxford/Austin Cambridge, A40, 1100/1300) suggested that they should concentrate on getting the side aspect correct and worry about the rear afterwards. The boot had

to be larger than the 1100's nine cubic feet so it was effectively stretched by a few inches and the edges sharpened to echo the slope of the rear window.

This then gave rise to the next problem of integrating this stretched boot into the bootlid area. Pininfarina came up with the idea of the "Cows Hips" to visually reinforce the corners which gave the rear end its very distinctive appearance.

Why then were the "Cows Hips" replaced by vertical tail fins on the Mk2? "Oh, it was Marketing who wanted that redesigned along with the narrower front grille," retorted Chris who then concluded: "I must say, without any reservation whatsoever, that without the genius of Alec Issigonis, none of these models would have come into being."



# 1996 and all that !

by Daryl Stephens

In this family, 1996 will go down as the year of the car ! The year began in a harmless enough manner- I obtained a quote to respray the shabby looking blue Mk 1- \$3000 Another quote to completely re trim the interior- \$1570. Plus oil from the exhaust pipe had turned the front of the caravan blue. She Who Must Be Obeyed decided to replace it .[ It of course means the car, I think ] I started buying the Trading Post each week. Colour was not important, except grey would not be bought, and the interior **had** to be red. Naturally, only Mk 1 1800 s would be considered.

Then son Adam- just 18 bit with no licence- was given the body of a 1972 2 door Austin 1100 . All the parts including the exterior trim and engine were in boxes ! Its one saving grace was that it had been resprayed. Curiously, the respray was in a different colour, and only the usually visible parts had been done.

**He** promptly became **we** as we tackled the project .Re assembly was not too difficult basically because the original build quality was similar to a Russian Lada. The engine was different. It transpires that the A series engine in 1098 cc form is not the worlds greatest small engine. In 1275 cc form, it may be. The decision was therefore made to source a 1275.

Club President Pat Farrell- a man of infinite contacts - knew of a Morris 1100 **S** which of course had the 1275 donk. It had been for sale for quite a while at \$2,500 which did seem a bit over the top. However, when we arrived, the car was a little gem. There were 2 problems . One, it was not an S and two in had a noisy tappet. Or rather , the owners claimed it was a noisy tappet. Strangely, they showed no surprise at all when I said the noisy tappet was a dropped big end ! Since the Morris was in far superior condition to the Austin, he/ we decided to abort the 2 door project and start again on the four door, if we could negotiate a sensible price. \$200 changed hands, and we towed it home. The door 2 proved impossible to give away and went to the tip.

The power unit was promptly ripped out. Then the Rover power steering rack fell to pieces ! Not overly serious, except that I was quoted \$750 to have it fixed. Anyway, with me pulling it out, the rack was rebuilt for \$150. Most interesting to remove, actually, because the engine had to be lifted about 100mm to clear the rack. So far- so good. Three weeks later, it was out again because the reconditioner fouled up ! Back to the Morris.

A 1275 was sourced and rebuilt. Now we came a little unstuck ! The Morris 1100 gearbox is not all synchro, as an 1800 owner would have expected. The full synchro boxes came with later Minis. Also only all synchro boxes will fit on the 1275 engine. And of course, an 1800 owner expects all boxes to like the 1800 box- indestructible ! Not so. It appears that the earlier sump gearboxes were under engineered, and BMC got such a fright that they over engineered the 1800 gearbox. The problems were all solved- eventually. Among those assisted, and got into Adam's wallet at the same time were Pat Farrell, David Ealey. Gerooff White[ Layco] Brian Pope[ Link] and Bill Mitchell of the 1100 registrar

[ Meanwhile. we were developing technics for looking at 1800 s. If the thing was visible front the street. and obviously a heap, we drove straight past.! That saved abusing the sellers for telling lies about their bombs ]

Naturally, a warm camshaft was fitted, and the original 4.2 diff swapped for a 3.7 In hindsight, Link Automotive 03 9873 1484 sell completely re conditioned 1275 power units for \$1,400 and that should have been the way we went !

In the fullness of time the car was registered, Adam obtained his licence, and was driving it around. Just as this occurred, I was working at a block of flats - the 1800 is my company car- and an old coot saw my 1800 and creaked over .

Thought "this old codger is going to waste a lot of my time while he reminisces !

He " Do ya want another one of those things, only the better Mk 11 ?"

Thought - If he makes another crack like that, I will deck him !

Said "I suppose I could have a quick look"

I came home with it ! After all, his mother had owned it from new and only knocked up 55,000 miles, it had a new clutch and it had been resprayed ! Best of all, he only wanted \$1,200 for it !

She Who Must Be Obeyed got to the bottom line very quickly. "What are you going to do with it ?" Gulp ! You see, I had not thought that far ahead !

A frantic period of activity followed as I made it Road Worthy, When ever I have a project on, Adam **evaporates**, and this occasion was no exception. I had owned the car for a week, and obtained a RWC and still had no idea what to do with it before Adam even condescended to examine it.

I might add that at this point the Morris was in the dog house because he could not fit the obligatory stereo system, with CD player without major changes Two circuits of the 1800 and a sit behind the wheel brought the question, "Could we come to some arrangement with this car ?"

The Morris proved unsaleable in all the usual places . Then daughter Naomi who at 16 is not interested in cars- she specialises in food- pointed out that the evening service at our Church attracts about 300 under 25s. Why not advertise it in the Church newsletter ? Three days later it was sold

Then the Rover fuel injection system collapsed again. The quote was \$1500 Near here there is an all makes wreckers yard, and from there I procured retro technology of an earlier model- to wit the twin S.U/s and threw the fuel injection in the rubbish bin Not hard, but very time consuming. The result is more power, better fuel economy, and She Who Must Be Obeyed complaining about having to use a choke..

Then one day at work, I followed a woman through a carport. I was negotiating a ladder over her car when she bent over to pull out a weed. The ladder smashed a light fitting and landed on the roof of her car. I landed on her. A few unnecessary things were said, and I finished up saying " Its only landed on the roof of a Citron. Its now even more ready for the tip than it was ! Another unpaid job !

Then a fully adjustable 1800 front end fell out of a tree. ie cartor and camber as well as the usual toe in. [ My car has always scrubbed front tyres ]. Do not know why, but I took months to get around to buying it . The front end was set roughly setl with the usual bit of long pipe- pending the arrival of the well overdue next 1800.

Winter time saw me compiling a check list for a good 1800 ;

No rust at all

sills unblemished

paint bright and shinny

dashboard top not cooked and ditto for the rear parcel shelf [ this to indicate the car had not been left out in the elements]

no signs of panel beating at all - ignition key to fit both front doors and boot !

completely straight underneath

no scrubbed tyres

interior as new *including the top of the rear seat*

mechanical condition not important- only checked to provide leverage in price negotiating

build date had to be between March 1967 and May 1968.[ Observations have led me to believe the build quality was highest at this point]

mk 1 dashboard [ late mk 1s have the mk 11 dash ]

not a Mk 1 1/2

Lost another customer in Winter ! To reach this particular house, one had to negotiate about 20 k s of appalling road. They told me that they kept a Peugeot 504 because nothing could hold a candle to it on the rough stuff. Anyway on this particular day, I came up behind the Peugeot in the 1800 just as the rough stuff started. The Frogie thing puffed oil and petrol as it was opened up. The lazy B series was promptly kicked into life and it was on ! I tail gated them for a few k s while they did their best. As I passed them, my rear venetian blind bounced out, but it was worth it !

Spring time and still no new 1800. The blue one was really guzzling the oil and it was decided that a new heart could wait no longer. At the same time, a new **Borg and Beck** clutch was installed and the Wade 240 Camm was swapped for a Wade 112. Also, the **Ecotherm** system was fitted. More about this in a separate article.

December and I struck gold ! A white/ red 1965 one owner with 95,000 appeared in the Trading post.

The old pile of **junk failed** almost all of the criteria and I still bought it. Even worse, it failed a Road Worthy because of a badly rusted engine bay. Undeterred I took time off work, removed the engine and stripped the engine bay. The further I went the more horrified I was. I had never seen an 1800 rust from the inside out before. Anyway, the engine bay was restored and repainted. All the time a voice inside was saying , " You are mad ! This car is not as good as the blue one you are going to sell !" I put my hand through a rusty sill and called **Simms** scrap metal merchants

Just put the phone down to Simms, and a customer rang to say they had seen a **brown** Mk 11 sitting beside the road with a For Sale on it, and a phone number. Brown ? Went to have a look out of curiosity , and it was not quite as described .You see, it was a brown **MK 1** -beige interior- one owner 85,000 miles with some large yellow driving lights which are useless as lights but look magnificent.

It passed my guidelines with ease and now lives here ! We nick named it Granny because it would do everything asked of it, *eventually*. On boxing day , there is always a family do a couple of hundred K s up the Hume. Against my better judgement , we that is Myself, She Who Must Go On A Diet {Janice}, Adam and Naomi piled into Grannie and off we went.

I let Adam drive up reasoning that Granny could get to maybe 70 MPH which would control him. Anyway , we left Melbourne. Trouble was, there were two young spunks in a little Huindia also belting along. Poor Granny was screeching as she had to lift her skirts and run ! The girls tried to shake us off, but Granny was equal to the occasion and indicated 85- 90 mph most of the way  
Down to 40 MPH in the town we had arrived at , and the oil warning light came on and *stayed on* ! I drove home very respectfully. Fuel and oil consumption worked out much the same.

The following day, Adam and I started the transformation. Take the complete power unit from the blue car and install in Granny { New engine , perhaps 120 BHP, 3.7 diff etc} Swap over the front ends [ Fully adjustable front end with new hoses on the hydro units] Swap over the rear end [ Ute rear end with the larger displacers, and new hoses on the hydro units]. We finished on a Thursday night.

A quick thunder round the block and nothing fell off. The name Granny was discarded as it no longer seemed appropriate. Since the car is officially Kelp Beige, it is now known as seaweed ! Reversed into the driveway, hitched on the caravan and went interstate the next day !

We were away for 3 weeks, and on the way home, I was informed that 1997 is going to be the year of the *house and garden* !

# DURABILITY TESTING

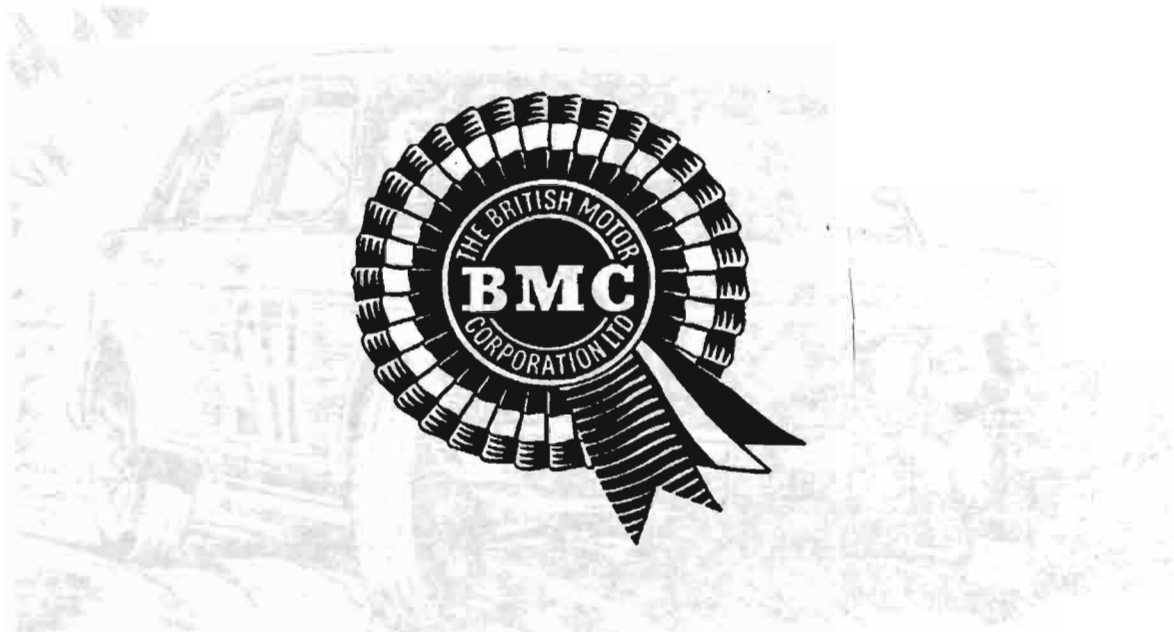
by Daryl Stephens

Product	miles covered	comment
Rear Aeons/ Bump stops another 120,000. Brackets a bit sad. Also the bracket went through the boot floor	120,000	Aeons themselves will do
Metal universal joints	120,000	should have been standard
Yella Terra roller rockers light weight camm followers and pushrods	45,000	the system is terrific it made as much difference as the twin SUs and extractorli
H.P. Long Centre branch extractors	65,000	Brilliant completely reliable
Hermans gear change	70,000	Does not leak or cause hydraulic lock- has never needed adjusting
Front Hydro Units in rear	65,000	Should have been standard [The 1100 runs the same units front & rear]

3.7 diff	150,000	if one is going to 'play' with ones car, this is the starting point.
twin 1 3/4 ' S.U s	130,000	Great- no problems with tuning
Downtons 1800 S extractors	15,000	Waste of money - never went further than 6,000 without welding
Ecothem System	5,000	Provable power increase Provable fuel decrease Engine feels a lot smother Warms up in half the time Heater sends out very hot air very quickly Increased flexibility

This is the system featured in the August/ September, 1996 {Page 11} newsletter. The system removes the thermostat from the top of the head, and places it in the bottom radiator hose. It also features an external bypass water system

Has proved itself under arduous conditions ie on a recent caravanning holiday, we towed in 40 o C, with the relevant gauge on the top of N- many lesser cars were overheating. Also Melbourne this summer has had many days of 40 or above [ today was 45 ] Even idling in traffic in this heat does not fluster the system. It is \$300 plus another \$100 to improve the water pump



1/7/96.

Karl Klipsch  
2 Shamrock Court  
Toowoomba QLD 4350  
(076) 354019 Hm  
0419 672 785 Mobile

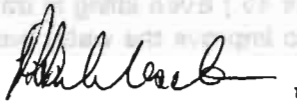
Dear Daryl,

Please find enclosed my cheque for 96/97 subs. I'd also like to mention something about my 1800. I was having a problem stopping the exhaust leaking at the manifold / pipe connection. I tried squeezing the clamp together in a vice before fitting but still no good so I got hold of a short length (about an inch and a half) of inch and a half OD exhaust pipe and pressed this into the car's exhaust pipe so it protruded out by approximately a quarter of an inch past the flange. This made it very easy to mate the pipe to the manifold and stopped the leaking. It obviously reduces the pipe internal diameter but doesn't seem to affect the engine performance. It's probably already been mentioned as a solution but I thought I'd let you know just in case.

Another thing, six months ago I had both front hydrostatic units fail within two weeks of each other. The units themselves were ok but both hoses had failed. I had new flexible hoses made and fitted by a local hydraulics expert for \$50.00 each and no problems since. Worth keeping in mind since Austins Over Australia is on up here next March.

Finally I enjoy the club in particular the newsletters and many thanks for your input.

Kind Regards,



Karl Klipsch



# BRAKING NEW GROUND

BY JOE BARLING

As the table below illustrates, a case can be made that B.M.C. were not happy with the brakes on the original AD 017

	1800[Oz & UK]	1800 S & 2200 [U.K.]	X6	1800 Mk 11{Aust }
	Girling	Girling	P.B.R.	P.B.R.
Disc diameter	9.28"	9.7"	10.50"	9.28"
Pad area [ total ]	21sq"	27.6 sq"	25 sq"	23.92 sq"
Min Disc Thickness	0.500"	0.500"	0.500"	0.500"

Those in Australia can upgrade the Mk 11 1800 to Tasman/ Kimberley brakes simply by installing the X6 pads.

To upgrade to 1800 S or 2200 brakes, one way is to contact Tony Wood in the U.K. ask him to send over the 3 pot calipers and discs. Or obtain the rear calipers off a P6 Rover V8- or the front off series 1 XJ6 Jag- have Kimberley discs machined down to 9.7' and Bobs your Uncle !

Curiously, it is not unknown to convert the P.B.R. calipers back to Girling, simply to gain some reliability.

If anyone knows of any ventilated discs, and 4 pot calipers that will bolt straight on to an 1800, please tell our Editor who can then tell the rest of us !

[ Editors note; those contemplating this conversion should perhaps talk to **Herman Pederson** as he has an 1800 S, or either Pat Farrell or Paul Nichols who both have done the conversion

## PAJ'S TECH TIPS

### Making Gaskets

*We all know that if you are stuck for a small paper gasket to assembly some parts on your restoration and you cannot buy one all you need is some gasket paper and small ball pane hammer, but what if the gasket required is for a delicate part like the carburettor. The method I use is to rub one face of the part which requires the gasket on a rubber stamp pad and then firmly place the part on the gasket and hold for a couple of seconds. After the part has been removed from the gasket paper you have an almost perfect outline of the gasket required see outline of the gasket required.*

*All you now need is a sharp modelling knife to cut out the new gasket.*

*If you are stuck in the middle of no-where with a non-operating thermostat (not opening) and upon removing the dud thermostat you damage the gasket HELP! Well, if you have a spare fan belt which has the cardboard label on it then this can be used for a gasket.*

### Temporary Gaskets

*First cut out the shape of the gasket using a small hammer and the thermostat housing. Then coat both sides of the gasket with grease (usually available around ball joints) or oil (which can be taken from the engine by the dip stick) this stops the cardboard gasket absorbing the water and you have a gasket which will get you home or to a local garage.*

# FOR SALE

Mk 1 1800 **one owner** auto Green/ green 1968 **45,000 miles** \$2000 K Batten Balwyn Vic  
[03] 9857 8821 No reg, no rwc or brakes

Mk 11 Ute Reg till Nov one owner for the last 15 years minor rust many spares paint  
ordinary **\$1,200** Alex Veleff [03] 9387 5084 Collingwood Vic

**A 55 Ute** 80% restored \$2,000 John Dunlop Maryborough country Vic [03] 546 612 661

**Also** Mk 11 1800 auto **33,000 miles** has been resprayed \$2,000

Mk 1 1800 1968 Resprayed in BRG minor mechanical maladies Auto 97,000 miles no reg  
or RWC **\$300** Boxhill Vic [03] 9898 8194

Mk 11 1800 Man maroon/. black new clutch **\$2000** not negotiable ! Cameron Dooley  
Naracoote S.A [08] 9762 1291

**Old Austin Ute** Free Engine out EX Brisbane City Council Telephone Raquel 3805 4684

**Kimberley plus spares** \$600 No RWC Runs well Mal [07] 5484 1342

Mk 11 1800 1969 VGC slight rust in one door Fawn QLD 3357 4384 \$2,000

MK 11 1800 perfect condition except for shot clutch two greens QLD 3851 0923 **\$400**

Mk 11 Kimberley 1972 46,000 miles Auto Red with rag top \$900 [Sandgate Qld] 3269  
5781

Mk 11 1800 Man **New Clutch** one family since new White / blue RWC E.C.Mt Waverley  
Vic [03] 9802 2837 **\$2,500** 68,000 miles

Kimberley auto **45,000** light blue Lillydale Vic [03] 9735 3324 \$350 M Ogal no reg  
**Only good for wrecking**

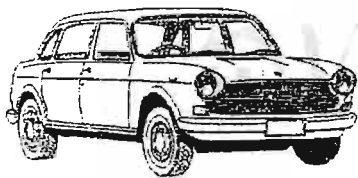
Mk 1 1800 1966 **Black/ red** 12 mths reg RWC \$1,500 Mr Robinson [03] 9336 2467  
East Keilor Vic [ Pat Farrell has seen the car and says its a beauty ]

Mk 1 1800 white/ beige \$200 as is, where is [ no reg ] heaps of parts [03] 9879 4183  
Ringwood Vic

1800 **S** twin 1 3/4 S.U. carbies, manifold and linkages- fully reconditioned- and a new set  
of **Downtons extractors** - ready to bolt straight on **\$600** plus a 2" stainless exhaust  
\$200 Club member Steve Millar 090 911 975 or 018 350 387

## REEL CARS ARE STEEL CARS !





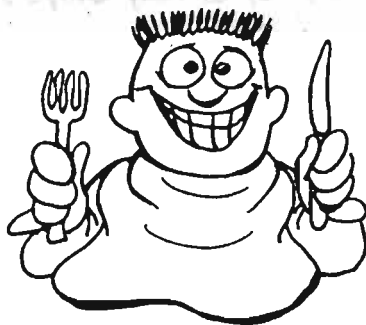
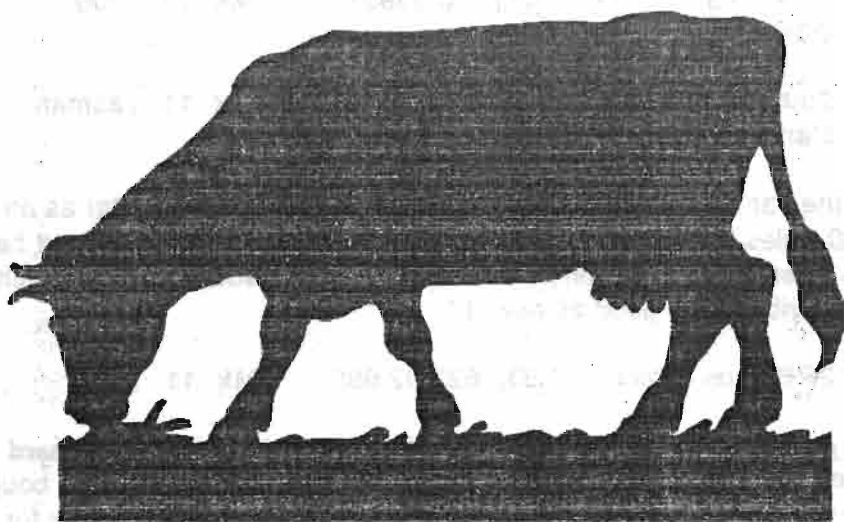
# LANDCRAB

CLUB OF AUSTRALASIA INC.



Welcome to newsletter number 74 June and July

The Prodigal sons brother was not pleased to see him back.



Neither was the fatted calf !!!

# INTRODUCING

Barry McInerney	1 Reserve St Neutral Bay N.S.W. 2089		
Kim Broadmead	M/ S 902 Dalby QLD 4405	[076] 638 142	Mk 11 1800
C Verkroost	26 Kensington Road Summer Hill N.S.W. 2130		Looking
Alicia White	63 Roseash Street Woodridge Q.L.D. 4114	[07] 320 93951	Mk 11 1800
John Bland	25 Keats Street Carlington N.S.W. 2118	[02] 9871 5674	Mk 11 Tasman

" I purchased the car advertised in your December / January newsletter as an Austin Kimberley with 13,000 miles on the clock. In actual fact, it was a Tasman and has now travelled 15,100 miles after its trip to Austin's over Australia at Toowoomba. It ran faultlessly. The N.R.M.A. have described it as good as new .! "

Douglas Bright	26 Boyton Street	[03] 622 92 665	Mk 11 1800
----------------	------------------	-----------------	------------

"Known history goes back to 1969. The father of club member **Richard Locke** purchased it about then and his wife had it for 4 years. After that Richard Locke bought for his mother and she owned it till last year. The steering was becoming too heavy for his 77 year old mother, and the car finished up at Tony Grey's Automotive [ Tony is a B.M.C. specialist ]

Tony was using the 1800 as a courtesy car for his customers when their own cars were being serviced. That's when I saw the 1800 - took a liking to it and bought it for \$750 Tony informed me that he had just replaced the torque converter.

Many thanks to Richard Locke for providing the early history. "

We now have **138** fellow sufferers in our club !

## UPDATE

### AUSTIN 1800 MK 2 BRAKE MASTER CYLINDER

#### REFURBISHMENT - PBR SYSTEM

If repairs are needed, i.e. to replace seals, it will be discovered that most brake replacement sources only stock either "complete unit" or "seals complete with piston/spring assemblies" and at a high price, also not generally in stock - must order-in.

Investigations reveal that the seals are common use items, used with many other components such as brake slave cylinders and clutch master cylinders - common to most makes with 13/16" bore.

To assist members in saving hard earned cash, the attached extract from Workshop manual is provided, together with the necessary part numbers to achieve "seals only purchase".

It is to be noted that seal item (1) may be hard to find in stock, but listed is an alternative which is a little thicker but easily obtainable, however, the piston groove will need to be machined out 1/32" wider to accommodate the alternative item.

Many thanks go to Dennis of Footscray Brake Service, for the research and assistance for this project.

## FOOTSCRAY BRAKE SERVICE

PTY. LTD.

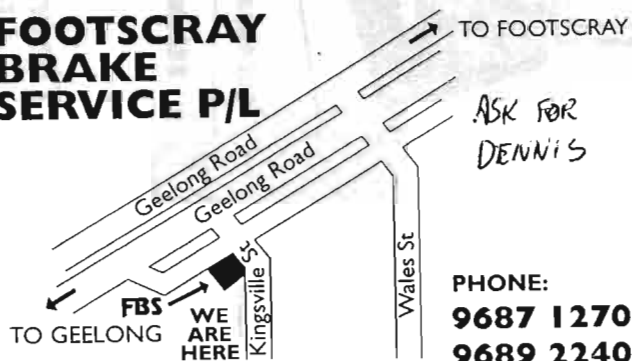
A.C.N. 006 217 385

307 Geelong Road, West Footscray, Victoria 3012

Telephone: (03) 9687 1270 (03) 9689 2240

Facsimile: (03) 9687 1270

**FOOTSCRAY  
BRAKE  
SERVICE P/L**



*K. Patience*

ISSUE 2 APRIL 97.

# **BRAKING SYSTEM** **AUSTIN 1800 MK 11**

**UPDATE**

**INFO**

$\frac{13}{16}$ " BORE

NOTE: Saloon master cylinder bore is .8 in. (20.320 mm).  
Utility master cylinder bore is .875 in. (22.225 mm).

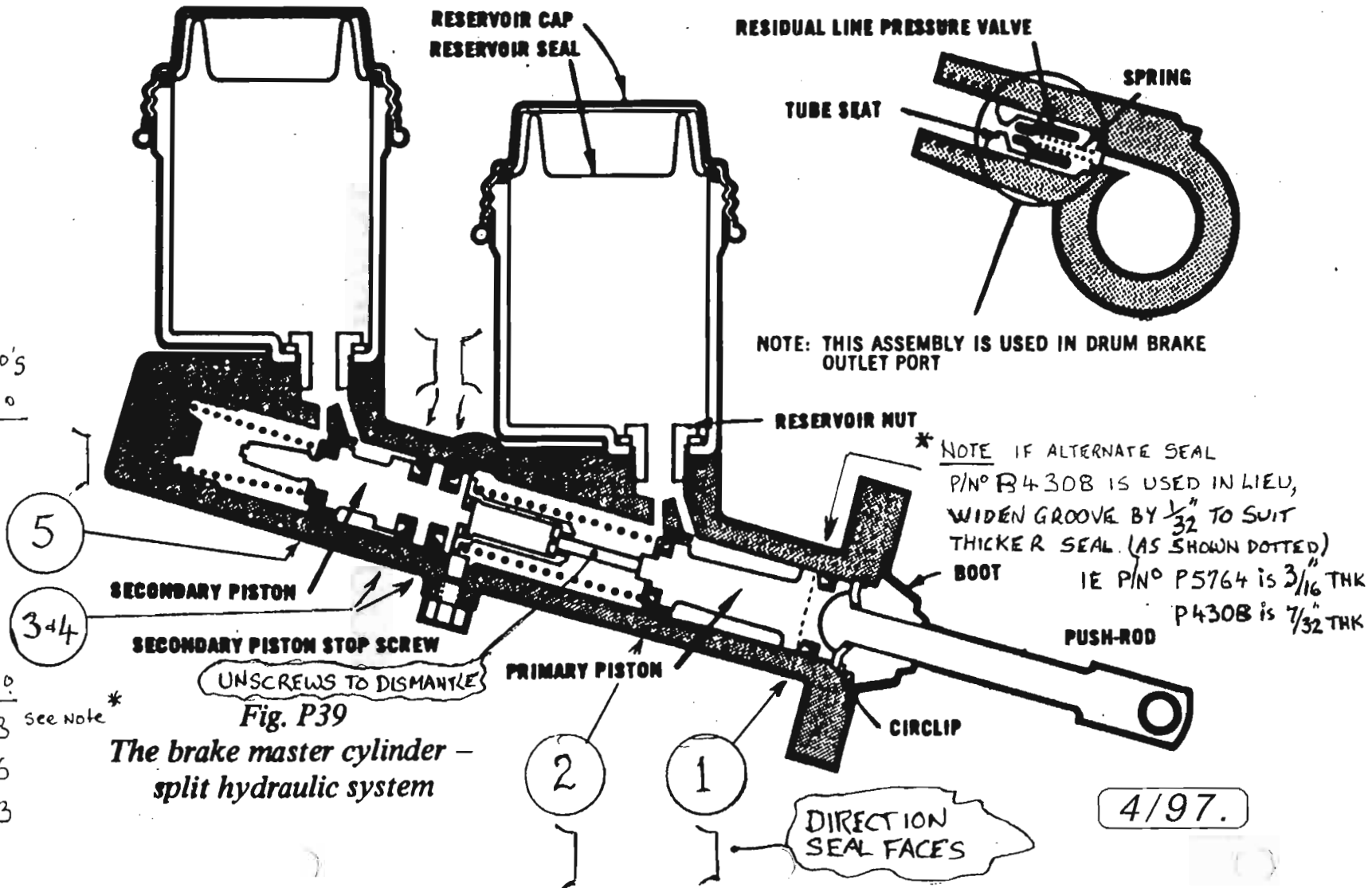
SEAL N°	DIM'S I/D	
	INCH	mm
1	$\frac{1}{2}$ "	12.8
2	$\frac{11}{32}$ "	8.8
3	$\frac{3}{8}$ "	10.

ORIGINAL PART N°S

SEAL N°	PBR N°
1	P5764
2	P5649
3 & 4	P5651
5	P5649

REVISED PART N°S

SEAL N°	PART N°
1	P4308
2 & 5	P5806
3 & 4	P5723



4/97.



## MAILBAG

Dear Daryl,

For reasons that are self evident, I wish my name and address to be suppressed - the reason will be self evident when the entire debacle unfolds. Sufficient to say I live in Melbourne.

The following advert, published in the club newsletter last October, caused all the trouble.

Probably a Mk 11 1800 either manual or auto Blue/ White **33,000 miles** has been sitting in a garage for the past 15 years gathering dust and cob webs in Sydney. so far so good The contact is Shirley Belcher in New Zealand

I rang Shirley in New Zealand. She promised to phone me back when next in Australia. On the Friday of the March long weekend, Shirley rang. I was prepared to go to \$1500 to have the car registered and Roadworthy in Melbourne. Which meant offering her \$200 **accepted**

Extras included one way air fare to Sydney,	\$280
Petrol to Melbourne	\$100
RWC and reg	\$1,000

The deal therefore appeared a goer !

The battle plan called for leaving Melbourne at 10 am arrive in Sydney 11 am. buy the car make polite conversation, change the oil and leave by 2 pm. We had a spare set of number plates with us off a registered 1800 - not to brake the law of course- just to bend it. I would drive the first stint very slowly. 'Perce' would then take over- being a P plater he would need a dictionary to explain speed limits, stay in one lane and turn the volume down- and the last 350 Ks from Albury, I would slightly stretch the 110 speed limit depending how fast the old girl would go. Home perhaps midnight.

Son, nicknamed Percy, came with me. The rest stayed home- after all being Sydney- rain was forecast. The flight was terrible and the landing even worse ! Perce was reaching for the necessarium when I pointed out he would never live it down. He turned a whiter shade of pale and battled on manfully. He decided he liked terra firma, and the more firma, the less terra !

Shirley met us at the airport. It was necessary to describe each other and I think she was mistaken with her age. I wonder if she thought I was? And drove us to Lane Cove to collect the car. Because of the Formula 1 race { the Melbourne cup on wheels } all flights to Melbourne were booked out! The bus with us aboard left at 7 pm, which left all afternoon sighting seeing. We took in Darling Harbour, including a Russian sub on display there, the Mono Rail, Sydney Tower and generally behaved like tourists.

The bus was a revelation! Smooth, quiet and roomy- almost if it had an east west motor and hydrolastic suspension. Some of the passengers were something else! One fellow who was feeling so unwell that his skin turned yellow and his eyes slanted- reached in front of the bus driver - no I mean Coach Captain - and turned off his personal dash mounted fan *while the bus was cruising at 100 ks!* The captain gently stopped the bus, and exploded! We arrived back in Melbourne at 6-30 am -older poorer wiser and needing a shower!

Did I forget to mention the car? We arrived out the front and saw a heap in the garage. No problems- he obviously had a spare to use for parts. Trouble was, that was the good one! It was an 1800 mk 11 manual with 33,000 miles on the clock. We discussed whether it was second or third time round! The interior may once have been white, but the chooks had put paid to that- the paint was blue in years gone by- the engine was sitting on the sump guard-the brakes were non-existent-and we had reservations about it taking us across Sydney harbour bridge. Would have loved to take home the long range fuel tank!

Editors note; Everybody has their price and mine is negotiable!



235-940 MGA, MGB SPIN-ON FILTER ADAPTOR  
FITTING INSTRUCTIONS

**KIT:**

- 1 Specially Designed Filter Head
- 1 Bolt Assembly
- 1 Tab Washer
- 1 Sealing Ring

**Method:**

1. Remove existing oil filter canister and filter head, along with the old sealing ring in the engine block.
2. Install new sealing ring into groove in engine block.
3. Put tab washer over bolt assembly and install bolt and filter head onto block. Before final tightening, ensure that the tab on the washer is located between the two projections on the bottom of the filter head, and that the oil pipe fitting on the filter head is oriented correctly to suit your engine. After tightening the bolt, bend part of the tab washer up against a flat on the nut.

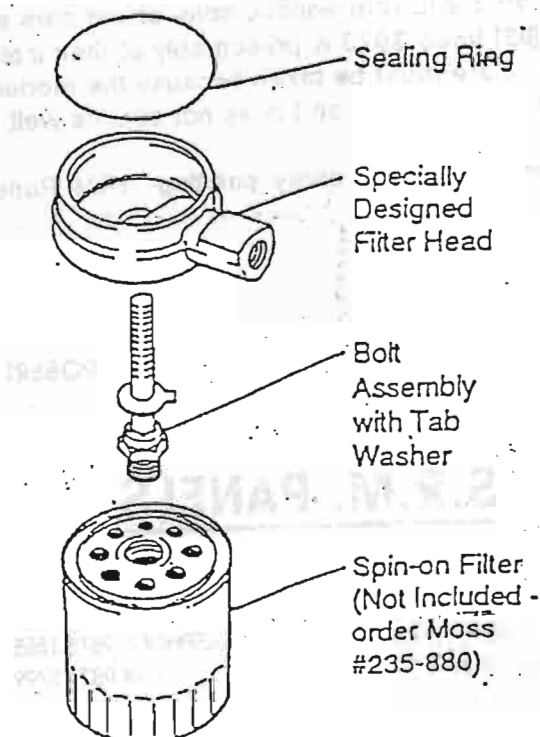


4. Smear a few drops of engine oil on the oil filter's rubber seal, and install filter, tightening 3/4 to 1 turn after seal touches the filter head.

We recommend Moss filter #235-880 or equivalent, for use on this filter conversion. This filter should be changed every 3,000 miles. However, any other spin-on filter may be used which has the appropriate thread size 3/4 UNF, and an internal relief valve.

MOSS MOTORS, LTD.

P.O. BOX 847\*\*7200 HOLLISTER AVE\*\*GOLETA, CA  
93117\*\* (800)235-6954\*\*FAX (805)968-6910



This oil filter is for 1800s only. For the Mk 1, it still hangs down and therefore looks original but being a canister, has many advantages

For the Mk 11 s, it hangs down instead of sticks up, and gives much better clearance around the distributor.

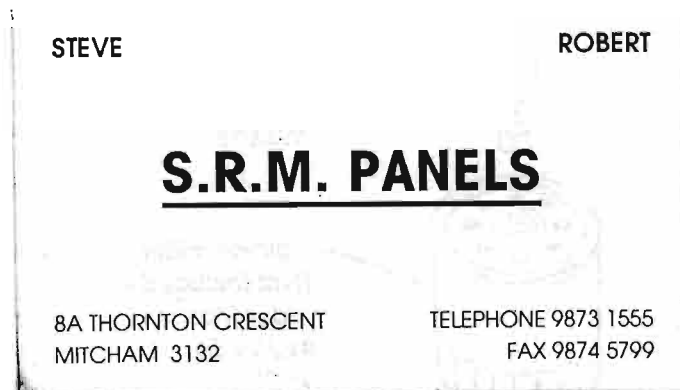
Once installed, it can be nearly completely filled with oil during an oil change. The oil warning light does not take 20 seconds to disappear. Also, the oil cannot drain out over night like on the Mk 11, so there is never a delay while the oil pressure cranks up.

Price was \$59-95 and the filter is the common Z 68.

# AROUND THE TRAPS

By Daryl Stephens

- \* The death of Peter Unsworth sadly reported .
- \* The next **Austin's over Australia** will be in Adelaide in 1999. Already Pat & Sandy Farrell, Herman & Alice Pedersen, and Daryl & Janice Stephens are committed to going. Jeff Kennett would be there except we cannot fit his mouth into a car !
- \* The quote from Ken Patience at the A over A in 1995 remains unbeaten. All the cars were lined up for a photographic session when the heavens opened. As we all ran for cover Ken said " Most owners could run faster than their cars will go !"
- \* The **filler strips** for the front and rear windscreens of our cars are available from the **Old Auto Rubber Co. [03] 9563 3023** & presumably at their interstate branches also. \$17-00 per windscreen. Care must be taken because the modern imitation stuff does not have the V on the back- it is flat- and does not seal as well.
- \* For those needing panel beating or **spray painting**- SRM Panels in Thornton Cres Mitcham do terrific



- \* As most of us know. the rear cradle- that is the gizzmo that holds the hydrolastic displacer - from a ute will bolt straight onto a sedan., enabling the bigger front units at the rear. The curious thing is that the X6 cradles will hold either the big or small units. Does this mean that the X6 cradles are really ute cradles with a slight adaption for the small unit, or does it mean Leyland Australia could not decide which unit to fit, and left their options open ?
- \* If anybody has a little time and **expertise** to play gearboxes, I am willing to donate a gearbox or two in an attempt to put **one more cog in our 4 speeders**
- \* For those importing parts from the U.K. it appears **far** cheaper to ring on a mobile !
- \* To make trailer or caravan wiring easier, 5 or 7 core wire , properly colour coded can be purchased from most auto outlets for \$2-65 per metre.
- \* **Twin choke cables** to fit twin carb 1800s can be sourced from a TR6, Hunter GT or one model of Mini. They are \$40-00 at **Link Automotive BMC Specialists** in Mitcham Vic [03] 9873 3874.

# FROM THE BACKSEAT

## **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell                      03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

## **REGALIA OFFICER**

Mike Gilmour                      047 81 8887  
Lot 57 Remembrance Drive  
Tahmor NSW 2340

## **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

## **PUBLIC OFFICER**

David Hopper                      [ 076] 333 383  
8 Evergreen St, Toowoomba QLD 4350

## **EDITOR/ SECRETARY**

Daryl Stephens                      03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

## **A.M.V.C. Sub Committee**

Pat Farrell                      as above  
Geoff Marshall                      03 9877 1425  
19 Anne Street, Blackburn Vic 3130

## **SOCIAL CONVENORS**

*Brisbane;* Peter Jones as above

*Melbourne;* Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489

*Sydney;* Mike Gilmour as above

Many thanks to **David Hopper** who has taken over from Ken Patience as **Public Officer**. This can be an infuriating job as Governments do not always act logically !

Opinions expressed within are not necessarily shared by the Editor of Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

Cut off date for inclusion of articles in the newsletter is the 25 th of the even month. Publication date attempts to be 25 th of the odd month .

## ANY QUESTIONS???





# TOOWOOMBA *Graphics*™

8 Evergreen Court,  
TOOWOOMBA, Qld. 4350  
Voice & Facsimile: (076) 333 383  
Mobile 018 700 450

Monday, 31 March 1997

Dear, Daryl

Just a short letter to let you know that we have decided to go manual box being a lot cheaper. The motor has been completed using the same block and crank shaft, the gear box is out of a Mk2, painting will commence about July with a full paint job inside and out. The blue Interior will then follow. Suspension was also done from back to front. My wife and I will try to restore it to original condition if we can but changes may happen. People ask why would you spend money on an old car when you can buy a late model with better comfort I simply say you have not ridden in an AUSTIN they look at you then ask all sorts of question about the car. The car was purchased in Brisbane at UK MOTORS Fortitude Valley on the 30/9/68 by my wife's late grandfather, what you may call a one owner. Special thank to Geof White of Laco and Terry at E.O.S. Brisbane, as well Pat Farrell & Darrel Stephen for there help and advice.

Thankyou  
David & Karen Hopper

# Stop the smog, step on the gas

California's smog police are lauding it as the biggest anti-pollution measure ever introduced: the equivalent of pulling 3.5 million cars off the State's roads.

It's not the electric car, nor is it methanol, ethanol, unleaded petrol or even the exhaust-cleansing catalytic converter. The silver bullet smog solution is reformulated gasoline, introduced for mandatory use in California last year.

With more than 100 billion gallons of the strange-smelling stuff already burnt, California Air Resources Board director, John Dunlap, says smog levels are down by 17 per cent, with airborne toxins falling "between 30 and 40pc". LA's air hasn't been cleaner in decades. "Reformulated gasoline has been the largest air quality control measure we've ever implemented," he said.

"It's the equivalent of pulling 3.5 million cars off the State's roads. That's 300 tonnes of air pollution a day and we've seen no problems at all with the performance of the gasoline since its introduction."

Unlike previous measures which only affect new cars, reformulated gasoline now fills the tanks of all 24 million petrol-powered vehicles rumbling down California's roads. And there's been an unexpected bonus. A lot of new models are achieving California's new certification as ULEVS (ultra low emission vehicles) by the simple means of operating on the oxygen-charged reformulated brew.

"The new gas is 17pc cleaner than the gasoline it replaced," Mr Dunlap said. "For air toxins, it's 30 to 40pc cleaner."

The advantages of alternative fuels such as propane gas, ethanol and methanol, he said, are now not so clear cut. "We're not completely sure of the market share they'll evolve into, because reformulated gasoline is so much cleaner."

Australia's oil industry consistently rejects the reformulated brew because the investment required to reconfigure California's refineries was \$6-7.5 billion.

3rd April, 1997

Paul Nicholls  
47 Moores Road  
MONBULK VIC 3793

Dear Daryl,

Reading "1996 and All That" in the last issue of "Landcrab" has prompted me to put pen to paper.

1996 was a year of mixed fortunes for our 1800 rally car, mainly due to failures of the adjustable front suspension.

Our first D.N.F. came a year earlier while dicing with the ex works 1800 SM0225G now driven by Tim Kennon. We were on the final competitive stage when we came across Tim stuck in a ditch on the outside of a left hand corner, probably due to the dreaded under steer.

We stopped to pull him out. While this was taking place, we were caught by a Bellet (remember, this is historic rallying!). When I had pulled Tim clear, I pulled to one side to allow the Bellet through - after all, we had blocked the road and held him up. That's when the fun began - by the time he'd gone through, Tim was on my bumper, pushing hard. The adrenalin rose - all three cars separated by less than 100 metres. I was all over the Bellet who pulled to one side to let both 1800's through, for a magic 10 kilometres, we raced through forest, bumper to bumper. I was gaining on the twisty bits, only to be reeled in on the straights.

200 metres from the finish, the road was deeply rutted and very muddy. It was also preceded by a caution board!!

Disaster struck, literally within sight of the finish on a short straight, the car turned left and thumped the bank. The left hand front corner was a mess, bent guard (of course) but the suspension had major damage, brakes, ball joints, lower control arm and caster bar. This posed the question - did I lose it, hit the bank and break the suspension, or did the suspension go first causing the crash?

It wasn't until September 1996 that this question was answered. Another competitive stage, a narrow track down hill to an off camber left hand corner, by the only clearing we had seen for ages. I turned left - we went straight on, stopping in the clearing with no drive. There we sat, with approximately 45° negative camber on the right hand front wheel! This time we were able to confirm that the lower control arm had broken first.

When we had the lower control arms made adjustable, the sides of the arm were built up with weld to form a solid bar. The bar was then cut in half with a left hand and right hand thread being cut on to the opposing halves. A long tubular nut (75mm) was then fabricated to rejoin the halves.

What we didn't realise was that in machining the threads onto the ends of the arms, we had removed the top and bottom sections of the web, weakening the arm in a horizontal plane. If you add to that some 120hp and heavy breaking, well - it all seems so obvious now!

Did you say you had fitted an adjustable front suspension to your new car, Daryl?

However, I do believe we have found the solution to the provision of some negative camber. Remove the front tower from the vehicle and machine 4.5mm from the top edge (where the two small studs are) to nothing at the centre (where the two big studs are). Refit to the car, making sure to tighten the two small studs at the top first. The bottom of the tower (where the long single bolt is) will now be 6 to 8mm away from the body. Install a suitable packer and hey presto - 3/4 of a degree of negative camber. If you noticed that 6 to 8mm is not a very accurate instruction, I have to tell you that although both towers were machined accurately, I fitted 6mm to one side and 8mm to the other.

We have run the car twice with this set up and so far, so good.



....2/

After the first incident, the car was repaired at a panel shop. Unfortunately, when fitting the new caster bar, they thought it was unnecessary to refit the really thick washer between the cap washer and nut inside the front housing. We found this out after fitting the 'S' brakes, which pulled the nut right through the cap washer.

As a footnote to Joe Barling's article on brakes, I have to say that we obtained new discs and three pot calipers from the U.K. and they are brilliant. They bolt straight on but the dust guards cannot be refitted, which is not really a problem.

Even with constant left foot braking under power, I have not experienced any brake fade.

While experimenting last year, we fitted a properly jetted and choked Webber carburettor to the car (first remove the heater intake plenum on the engine side of the fire wall to make enough space!). When dynoed, the twin SU's provided 15bhp more at 5,000rpm.

Number One son wanted a gold pass for the Grand Prix for his 23rd birthday. Smart lad, \$450 a pop!! I refused, but offered to pay an entry fee into a novice rally (held recently by the Monash Car Club) and loan him the 1800. He was running 2nd at the end of the fifth of seven stages. However, his dramatic exit on the sixth stage meant that it would have been cheaper to send him to the G.P. in a stretch limo with four of his mates - but that's another story.

Regards,

PAUL NICHOLLS

# THE GOOD NEWS

BY PAT FARRELL

**CLUB FEES** are due . Please remit **\$30** to

The Landcrab Club  
22 Davison Street  
Mitcham Vic 3132.

Also, the secretary would like your a/h phone number  
as most have changed.

# LEYLAND KISSED THE BULLFROG-AND IT AWOKE AS LEYLAND'S PRINCESS

The 1800 has been a reliable seller for Leyland but the new 1800 — called Princess in the UK and as yet un-named for Australia — is a sophisticated motor car. When Geof Murray, manager of Scientific Publications, was in the UK he gave the Princess an exclusive test for us using Scientific's UK workshop and engineers.



They used to sneer at the office — “what on earth do you want a pregnant Bullfrog for... why don't you get something that looks like a car?”

The sneers dropped away to the occasional snicker after that memorable London-Sydney rally, and the outstanding performance from an Austin 1800.

This same basic vehicle — within a new shell — is now selling very nicely in Britain, under the name Princess. At the moment it is selling better than 2000 a month, which puts it a bit behind the Cortina 2000 and a bit ahead of the current Hunter.

What is the Princess like to drive — would it do as well in Australia? After 1600 km around England, I am convinced it would find a very useful place in the market here, at the right price.

Mechanically, it is the most interesting car around in the popular 1.8 litre range. The transverse engine is there, the suspension is Hydrgas and extremely good — the space for passengers and luggage is unbeatable.

Two engines are available in Britain: the four cylinder B-Series 1.798 l ohv and the six cylinder E-Series 2.227 l ohc. The word is that only the four will come here, which is something of a pity.

Even Mac would be happy with engine bay access to the four — and the six is almost as good. All the routine bits are very accessible, as the photos show. Relocation of the radiator to the front of the compartment has yielded good working space down both sides of the block. (The fan is thermostatically controlled now, of course).

The power steering pump is mounted on top of the alternator.

The carbie is a single SU HS6 on the four, while the six has new twin SU HIF6 — see Brian Woodward's report in November AUTOFIX.

Driving the four I had on test was a pleasure — once it warmed up. Starting, with a 3 mm coating of frost in the North of England, was a problem most mornings.

Like the old 1800, the power was more than adequate, given intelligent use of the gearbox. The standard box for the Princess is the C-Series unit, with baulk ring synchro on all four forward gears.

The rod-shift remote control system was better than the old cables on my 1800, but looks a little exposed for Australian conditions. The box worked smoothly, and I couldn't beat the synchro at any stage.

A Borg-Warner 35 three speed auto is available as an option.

Leyland has gone to a lot of trouble with the engine mounts, using a four-point system with rubber "pots". The split type support shells are bonded to the rubbers, which are carried in die-cast aluminium brackets, bolted to the body front cross member and bulkhead cross tube.

Each mounting is given the required degree of torque and engine ride control by varying diameter "snubber" washers acting on the top and bottom faces on the mounting rubbers. The rear mountings are harder than the front mountings, too.

This system undoubtedly contributes much to the Princess' smoothness, by isolating the power unit from the rest of the vehicle.

The suspension is extremely good, and was developed from other hydroelastic units designed by Leyland. The front suspension units are mounted horizontally in a cross tube which is an integral part of the body shell bulkhead assembly.

The forged upper suspension arm operates the Hydragas unit in lever fashion through a knuckle joint and pivots on rubber torsion bushes pressed into the body of the arm. Mountings for this upper pivot are contained directly in the ends of the cross tube.

The lower suspension arm has very wide-based rubber torsion-bushed pivots, set well back in relation to the front wheel. This ensures the suspension loads are fed into the strong bulkhead

Access from the front is very good on the Princess. The unit arrowed, to the right, is the power steering pump.

and floor-toeboard junction. This means there are no suspension loads in the front end structure, which is therefore free to provide optimum impact crush.

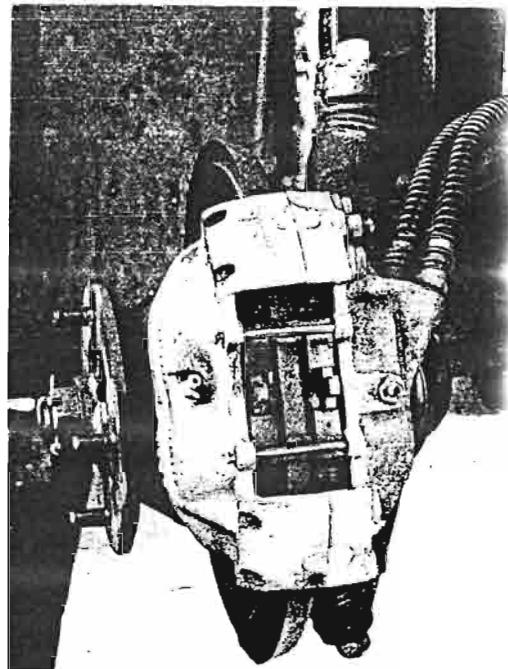
The rear suspension has trailing arms and levered Hydragas units, mounted on rubber torsion bushes to a cross tube. The cross tube in turn is rubber mounted to the body shell. This means the high levered force on the spring unit is contained within the cross tube assembly — the body shell has only normal road wheel loadings to absorb.

Steering is rack and pinion — power assisted with an XJ6 type unit as standard on the sixes. Power was fitted as an option on the four I had on test. Turning circle is 11.5 metres, with a between walls figure of 12.2 metres.

According to Leyland "the mounting compliance has been carefully tuned to give insulation from shock and vibration without detracting from steering precision." It does all of that, plus eliminating most of the road feel. As power steering goes, I've driven much better (like the unit fitted to my Falcon) and much worse (like the unit available for the current Valiant).

Hanging the power steering pipes under the sump is the worst bit of design on the Princess. When the unit comes to Australia, a sump guard will be a standard fitting — unless Leyland owners want a ton of trouble from pipes eliminated at the first pothole.

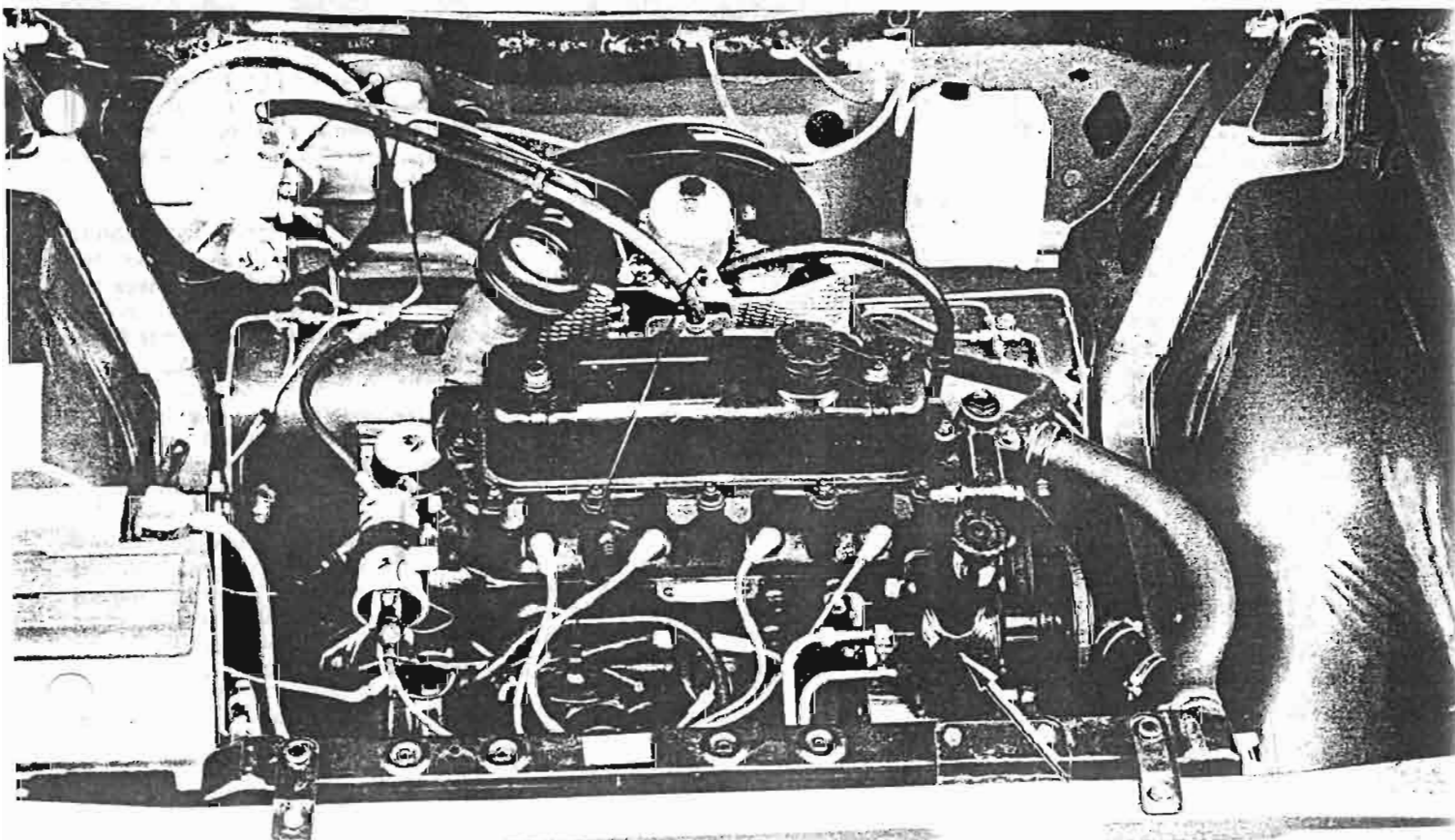
Brakes are exceptional. Servo assistance is standard on all models for the 27 cm diameter drums at front and 22.8 cm diameter drums at the rear. Total swept friction area — front and rear — is put at 318.64 cm<sup>2</sup> by Leyland.



With the wheel off, you can get a look at the excellent disc setup on the Princess, with dual brake lines leading into the four-piston caliper.

Each system has independent dual circuit hydraulics. Each front disc has a caliper with four pistons. Each hydraulic circuit acts on two pistons per front caliper, and on one rear wheel cylinder... described as a "dual line hydraulic system with 'L' split".

The body style is extremely modern, with length up by 225 mm on the old 1800. The basic design objectives, according to Leyland chief engineer Tom Penny, was "passenger comfort, allied with good ergonomics, serviceability, and easy repair and replacement of components."



Styling chief Harris Mann said he set out to get away from the "sedate image" of earlier Leylands. "The 1300 and old 1800 were all based on the same Mini concept and blown up in size accordingly — like a photo enlargement." Despite their practical merits, and their purposeful character, they were not particularly attractive."

Mann wanted a design for a spacious family saloon, with styling advanced enough to last right through the 1970s and beyond. To my mind he, and Penny, have more than succeeded with the Princess and its all-steel welded monocoque shell.

The car interior feels large, even by the old 1800's standards. The Princess is the only car I've driven where I couldn't reach the front firewall with my left foot — it felt a bit weird at first.

The driver has a choice of 240 seat positions — with the usual forward and rear travel, plus seat height and tilt adjustments. The seats were very comfortable with good support for long journeys.

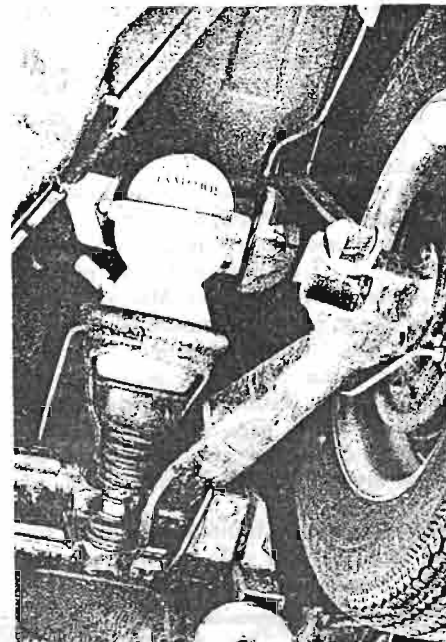
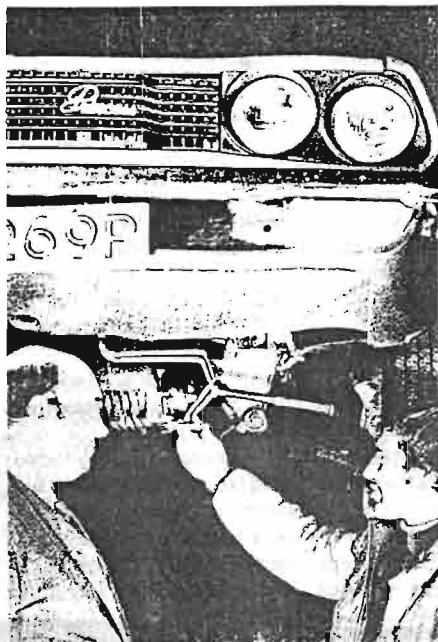
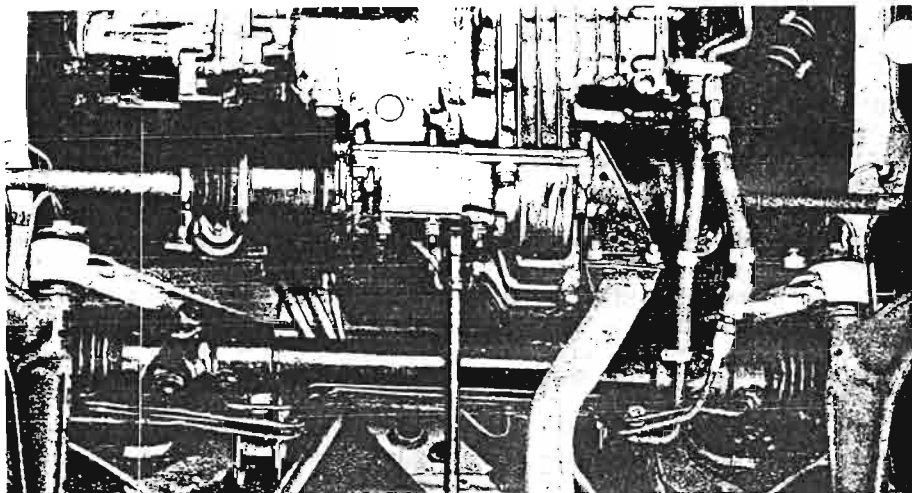
Facia layout was practical and neat, with all dials and switches well placed. The conventional light control stalk was to the right, with windscreen washer/wiper controls on a stalk to the left. (Why don't all manufacturers use this setup?)

Bearing in mind my duty to AUTOFIX readers, I tried out the fresh air ventilating system, despite the snow and sleet (admittedly the test only lasted 30 seconds). The arrangement is the best I've struck in popular UK cars, and more than adequate for Australian conditions.

The heater/demister was extremely efficient — and that I gave a long thorough testing. One ingenious feature allows the air to be recirculated within the car, instead of being drawn in from the outside. The advantage of this in beating exhaust fumes showed in a two-hour 20 km drive into traffic-bound London on Monday morning. It works extremely well.

Overall, the Princess was a pleasure to drive, handling well and surely in the best 1800 fashion on the open road, and at most times on the motorways.

It was a pig, however, on the motorways in a cross wind. This is hard to explain, given the aerodynamic shape of the car. One suggestion came from Geoff Burke, Scientific Publication's motor mechanic, based in Durham. He said he felt the power steering lacked sensitivity, and this allowed the wind to push the car off course fractionally, without a feel of the movement coming back through the wheel. The instinctive minor corrections made by the driver in a conventional car, were not made with the Princess, until the drift off course became noticeable.



Thinking back, he's probably correct. However, with the sad lack of motorways in Australia, this problem won't worry many of us.

What price Leyland will put on the Princess in Australia is a key factor. Leyland put a tag of about \$6500 on the Dolomite in Australia, compared with a price of about \$4100 in the UK. This is after paying duty, meeting Australian design rules, and adding higher sales tax than applies in Britain.

The Princess 1800 and Dolomite are very much the same price in Britain — although very different cars, of course.

It would not be unrealistic to expect a price of around \$6500 when the Princess reaches here.

On current values at \$6500 the Princess would be competing with the upper level of sixes produced by Chrysler, GMH and Ford. It would be around, or slightly below the cost of imports such as the Alfetta, Citroen GS Club, Fiat 132, Peugeot 504 or the Renault 15 TSA or 17TLM.

The general layout of the power steering rack and the remote control gearshift rod are shown in this photo. The lower-suspension arm mountings can be seen at left and right.

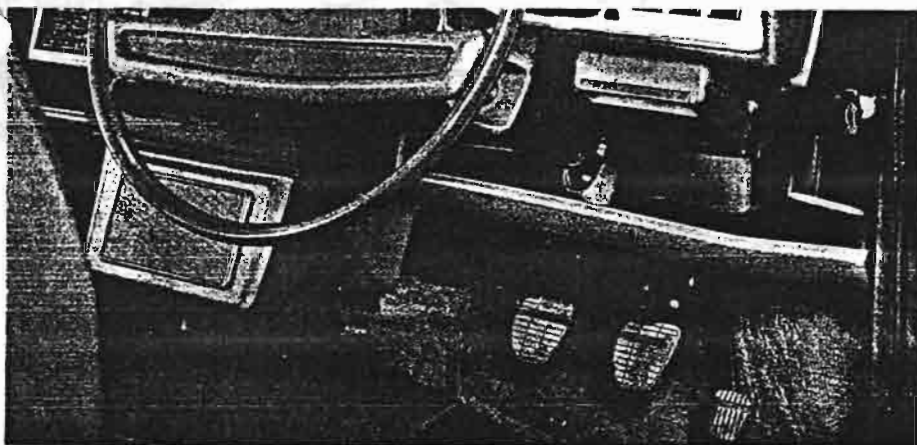
Left: Manager of Scientific Publications' Durham workshop, Frank Horner, and his mechanic, Geoff Burke, check the power steering pipes tacked on the engine sump. It might do for the Poms, but not for us.

Right: The rear offside suspension layout of the Princess is dominated by the big Hydramag tank. See the text for an explanation of this ingenious unit.

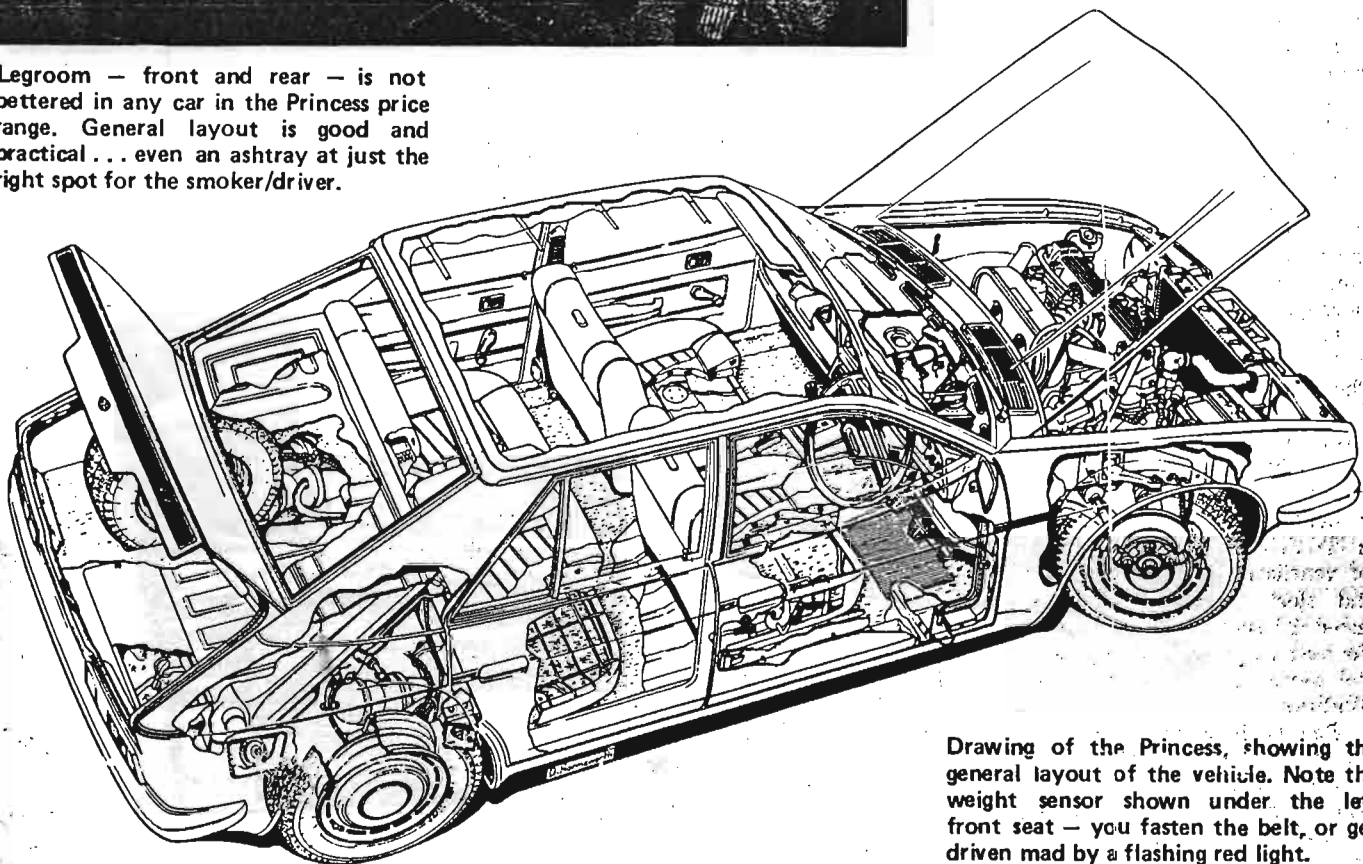
At these sort of prices, the Princess will certainly get a share of the "want-to-be-different" market — quite a useful one — but it certainly won't worry the Colt/Torana/180B/Corona bunch in the market place.

A pity, because it is one of the best family saloons to come from Leyland.





Legroom — front and rear — is not bettered in any car in the Princess price range. General layout is good and practical ... even an ashtray at just the right spot for the smoker/driver.



Drawing of the Princess, showing the general layout of the vehicle. Note the weight sensor shown under the left front seat — you fasten the belt, or get driven mad by a flashing red light.

## SPECIFICATIONS

**Engine**, Leyland B Series four cylinders in line mounted transversely located on four pot-type mountings, at front. Cast iron block and head. Five bearings. OHV pushrod operation.

**Bore x stroke** . . . . . 80.26 x 89 mm

**Compression ratio** . . . . . 9.0:1

**Claimed power** . . . . . 82 bhp at 5200 rpm

**Transmission**, four speed all synchromesh with floor mounted lever and rod linkage. (Option Borg Warner 35)

**Manual ratios**

First . . . . . 3.29

Second . . . . . 2.06

Third . . . . . 1.38

Fourth . . . . . 1.00

Reverse . . . . . 3.07

**Final drive** spur driven, integral with gearbox.

**Ratio** . . . . . 3.72

**Suspension**, Hydragas interconnected, all

independent. Hydragas spring units incorporating pressurised nitrogen springs and integral damping.

**Front** — unequal length transverse links, pivoting on rubber torsion bushes. Upper arm operates Hydragas spring via knuckle joint. Springs located in integral horizontal cross tube. Suspension mounted directly to body.

**Rear** — fully trailing malleable cast iron arms, pivoting on rubber torsion bushes, mounted on a transverse cross tube. Cross tube rubber mounted to body. Hydragas spring units mounted horizontally in longitudinal yokes attached to trailing arm pivots, and operated by lever and knuckle joint.

**Steering**, rack and pinion with double universal joints. (Optional power assistance).

**Turns lock-to-lock**,

manual . . . . . 4.37

power assist . . . . . 3.26

**Turning circle** between walls . . . . . 12.2 m

**Brakes**, disc front and drum rear. Dual circuit to two front and one rear wheel.

**Wheels and tyres** . . . . . 4.5J x 14 wheels  
185/70SR14 tyres

**Length** . . . . . 44554 mm

**Width** . . . . . 1723 mm

**Height** . . . . . 1411 mm

**Ground clearance** (unladen) . . . 164 mm

**Weight** kerbside . . . . . 1160 kg

## PERFORMANCE

(Claimed by Leyland, not verified by AUTOFIX)

**Acceleration**

0-40 mph (0-64.4 km/h) . . . . . 7.5 sec

0-50 mph (0-80 km/h) . . . . . 10.5 sec

0-60 mph (0-96.7 km/h) . . . . . 15.5 sec

**Fuel consumption** on AUTOFIX test, 12.5 gal/342.3 miles (27.38 mpg or 10 l/100 km).

AS SEEN ON  
"BEYOND  
2000"

# "No more windscreen smears"

NEW TO  
AUSTRALIA

**SAFETY GROOVES** form an automatic windscreen cleaning system, for improving and maintaining visibility with reduced driver fatigue under all weather and driving conditions.



The patented process consists of two hardly noticable 0.3mm deep grooves, which are machined into the existing windscreen, parallel to the wipers in their rest position.



Approved by Road Traffic & Safety Authorities.

Windscreens remain roadworthy and are identified with a permanent, serial numbered symbol.



**SAFETY GROOVES MAY JUST SAVE YOUR LIFE**



For further professional advice and the location of your nearest outlet contact:

Crystal Windscreens Pty Ltd Licensee for

**SAFETY GROOVE**

Tel: (03) 9762 0422

Please read overleaf for more information on SAFETY GROOVES - a clear vision of road safety



We know the **HAZARDS** of driving with **smudged dirty windscreen into the sun, in rain or night driving with glare effect**, constantly and dangerously distorting our vision.

Furthermore, we have to cope with:

- \* Insect splatters
- \* Traffic film
- \* Diesel spray
- \* Dust and grime

all these being smeared over the windscreen and causing fine surface scratches and premature wear of wiper blades and the windscreen itself. The result is poor visibility.

Now there is available a **PERMANENT** and well proven **automatic cleaning system** to overcome these problems.

Have **SAFETY GROOVES** installed for:

- \* **CRYSTAL CLEAR VISION**
- \* **CLEAN WIPERS and PRACTICALLY SCRATCH-FREE WINDSCREEN**
- \* **MAINTENANCE FREE OPERATION**
- \* **MUCH IMPROVED WIPER RESILIENCE** (doubling their life span whilst maintaining wipers' original working effectiveness)
- \* **REDUCTION IN WASHER FLUID CONSUMPTION**
- \* **SAFER HALO and GLARE FREE DRIVING**

Safety Grooves will help windscreen wipers to cope with summer bugs by cleaning the wiper blades of sticky substance. However, for best results always use specially formulated Safety Groove washer liquid on vehicles fitted with Safety Grooves.

Safety Grooves can easily be installed, both on new and used vehicles, by our licensed operators trained to perform precision grooving.

The patented process is simple and well tried. Shallow 0.3mm deep grooves are machined into the windscreen parallel to the windscreen wipers and approximately 2" away from the blades. The sharp edges of the grooves clean the wiper rubbers as the blades sweep across them and continuously deposit all contaminants into the self cleaning groove structure. The gentle honing of the wiper blades will clean the working edges and keep blades flexible for prolonged life.

Safety Groove system prevents road grime, dust and dirt being smeared by dirty wipers, like sandpaper, back and forth on your windscreen.

Wipers which are continuously cleaned, when dirt and contaminants are automatically swept into Safety Grooves, will prevent the surface scratching of the windscreen.

Safety Grooves should also be considered for the rear screens equipped with wipers. The benefits will be substantial, as the suction vortex from driving in rain or under dusty conditions will suck a lot of abrasive dirt up. Safety Grooves will keep your rear screen practically scratch free.

Technical Research Centres have established that Safety Grooves do not weaken the windscreen or promote stress factors.

## SAFETY GROOVE ACHIEVEMENTS

\* Safety Grooves won the 1985 Traffic Safety Award in Scandinavia which recognised Safety Grooves providing outstanding contribution to traffic safety.

\* In 1986 Safety Grooves were again awarded at the World Fair for Inventions in Brussels.

\* In 1990 Safety Grooves once again received an award for one of the best practical inventions for the advancement of traffic safety.

In Scandinavia motor vehicle insurance companies have seen the benefits of Safety Grooves as being so clear-cut that if a windscreen equipped with Safety Grooves becomes damaged, the compensation for a replacement windscreen will include the cost of installing new grooves. The head of Traffic Safety in one of the major insurance companies in Finland said: "We must continuously work for improving road safety. It is of prime importance to maintain an open mind and a positive attitude to traffic issues and promote efforts aimed at improving road safety."

Whilst Safety Grooving is new to Australia it has made a big impact to road safety in Scandinavia.

The product was originally developed for Police, Emergency vehicles and Taxis in Scandinavia, but soon found its way into other sectors, such as, trucks buses, company fleets and private vehicles.

Today Government backed Motor Registration Centres' Vehicle inspection facilities in Finland, provide Safety Grooves during annual vehicle roadworthy process, in all of their inspection locations. 1992 statistics show over 26% of all vehicles registered over there have been grooved.

In our country, there is a fast emerging user base, developing among the motorists, who have been exposed to Safety Groove concept.

Our forward thinking Oil Companies, Truck suppliers and fleet owners, plus sectors of motor vehicle industry are using the Safety Grooves. **WHY?**...because the Safety Groove concept works by delivering safety, operational benefits and monetary savings to the users.

*The use of Safety Grooves have unanimously been endorsed and recommended in Scandinavia by Police, Emergency services, Motoring Organisations, Insurance companies, National Safety and Traffic Authorities. Four wheel drive enthusiasts, competitive rally drivers and our touring car drivers were quick to see the benefits of improved visibility, with many leading teams now using our product.*

Crystal Windscreens Pty. Ltd. Licensee for

**SAFETY GROOVE**

PO Box 501, Boronia, Victoria, Australia, 3155

Phone: (03) 9762 0422 Fax: (03) 9761 2200

# FOR SALE

A 90 **Atlantic** Hardtop **27,000 miles** needs restoration but has good body \$6,500 **Also** A 70 body \$350 Ken Barmiter [076] 648 349

A 95 **Westminster** 29,800 miles. Only needs paint Ross [071] 231 895 \$3,000

Tasman/ Kimberley **Front blinker lens assemblies** New original Part no. AYB 9125 \$25 pair or \$40 two pair Greg Fienberg [065] 797 075

Mk 11 1800 Man 2 owners Registered, but no RWC [03] 9850 1470 **\$500**

**Austin Kimberley Mk 11** Registered till July Runs well good condition 2 spare engines 1 manual 1 auto lots of spares 5 new tyres \$2,000 015 731 733 [QLD]

Mk 1 1800 Good condition **Will deliver** Holland Park QLD 3216 6394

Mk 11 1800 1967[?] **Free** Good condition Ian Miller QLD 3349 0326

Mk 11 1800 **Manual** Rob Cork Gatten, near Brisbane \$1,500 [07] 546 2376

1800 or **X6** 18/ 67 [3.7] crown wheel and pinnion **Bill Stevenson 23 Shinnick Ave, Oakhurst NSW [02] 9835 4425** Also an unused re coed 1800 head \$170 and a Mk 11 short motor with new 40 thou oversize pistons \$650

1800 Mk 11 293,000 miles Registered till June Offers Mrs Knowles [03] 9300 1930

Austin Ute perhaps 1800 No reg or RWC Needs TLC Offers Bairnsdale Vic [051] 52 5046

**Two** 1800 s one registered Offers invited Justin [049] 336 224 Newcastle

**Seat Belts** new- old stock Non retractables Britax left overs from the Leyland factory tan, dark brown and black Lap/ sash **\$55** Michael Bartook a/h [02] 9875 1203

A **paddock full of Austin 1800s QLD** about 35 of them in going condition Tim Holt 018 783 328

# WANTED

~~Aster Diamond Dot pushbutton Radio for Mk 1 1800 with positive to earth~~ Daryl Stephens  
[03] 9873 3038 **Also** genuine BMC rear mudflaps

**POLITICIANS ARE FAILED USED CAR SALESMEN**

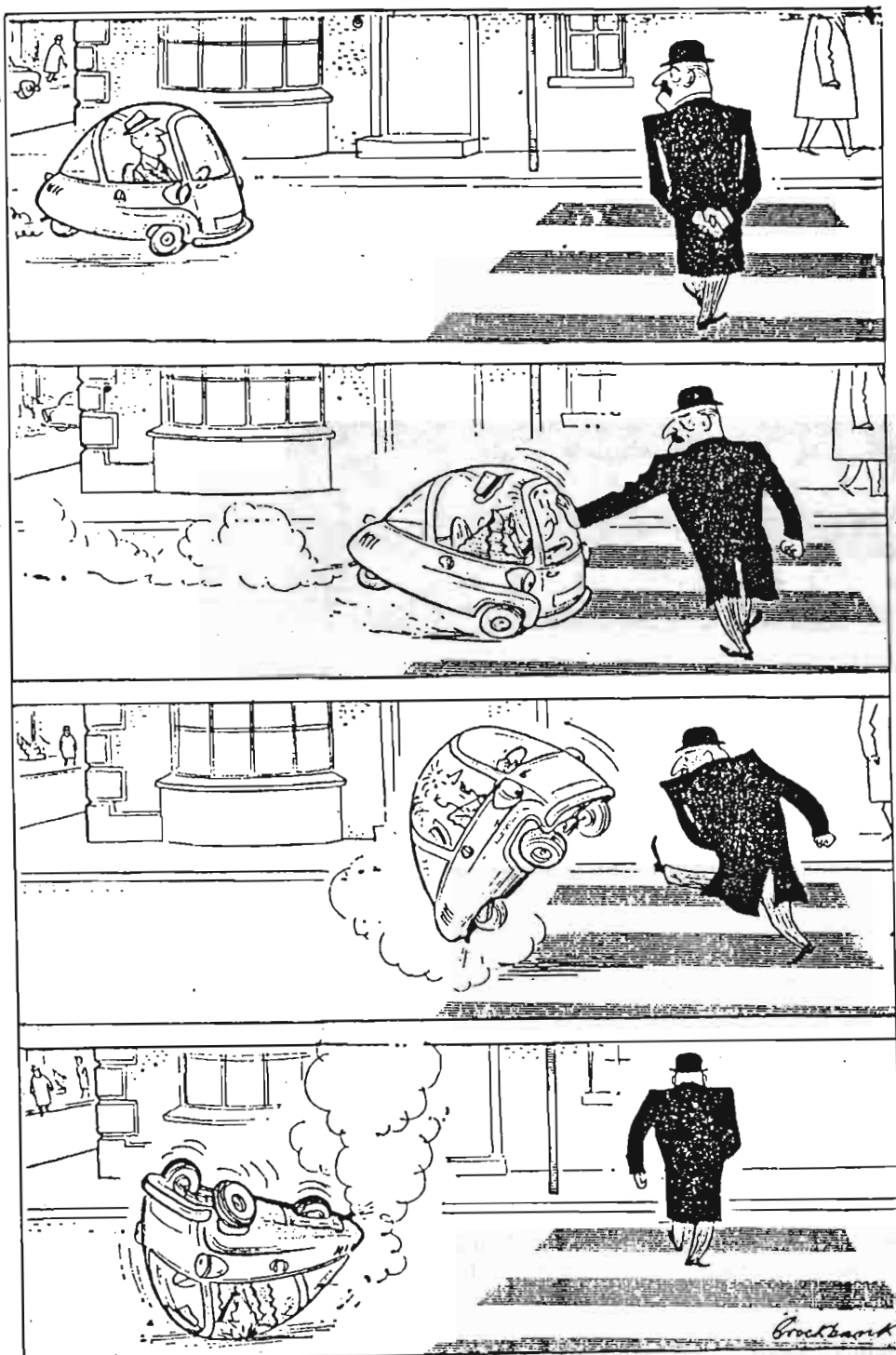


# LANDCRAB

CLUB OF AUSTRALASIA INC.



Welcome to newsletter number 75 for August & September 1997



# INTRODUCING

Clifford Manning

39 Alawoona Avenue  
Mitchell Park S.A. 5043

[08] 8277 0465

Mk 1 1800

Jim Duffin

56 Ruhamah Avenue  
North Geelong Vic 3215

[03] 527 88373

Mk 1 1800

Mk 11 1800

"I would like to join the club, and ask some questions. Allow me to mention I am a crank [ with Austins ]. I have owned 3 Mark 1s and a Mark 11, which is currently unregistered . Also I have owned a **Morris Gomad** for **25 years** . I also restored a Mk 11 for my nephew . [ Editors note - For those who are not fortunate enough to reside in Australia - the Morris Nomad was basically the Morris 1100 with the 1500 Maxi engine and transmission It had 4 doors, unlike the U.K. station wagon which had 2 and a full sized rear door. Perhaps not dissimilar to the Renault 16. ]

I would also like to mention about a Mk 1 i purchased with 70,000 **genuine miles** on the clock . It also had a million dollar polish job on it . The 70,000 miles should have been 270,000 as the first owner I contacted did 145,000 miles !

Timeless Enterprises Pty Ltd trading as

## Dashboard Repair Centre

ACN 058 387 170

Factory 4, 166 Maroondah Highway  
Ringwood 3134

Ph 9879 5535

Fax 9870 9009

12th May 1997

To the Secretary,

Following is an explanation of the care and maintenance of car dashboards that you may reproduce for your newsletter in whole or part as long as you acknowledge its source.

### CARE & MAINTENANCE OF DASHBOARDS

Prior to the late '60's dashboards were generally made of metal and were a welded fitting of the vehicle. Sometimes they were adorned with wood panelling or the occasional strip of vinyl or leather padding. Any padded areas were made of a foam rubber underlay and a soft vinyl skin - they were screwed over the metal to provide some shape and visual appearance. This was generally referred to as a "crash pad". Its value in a crash was questionable.

Then came the era of the integrated dashboard, a fully removable one piece item consisting of a metal or plastic base, polyurethane foam underlay and vinyl or leather skin.

This style is still being used today. The change was brought about by both a need to reduce manufacturing costs and legislation concerning passenger safety in a crash. Indeed, dashboards are getting larger and becoming integrated into door trims to provide a more integrated appearance.

Along with this change has been the need to protect the soft fabrics from the effects of sun and aging. In Australia, the effect of UV rays on the polymers of the vinyl skin (or cells of the leather) are greater than most of the countries they originate from - European cars generally have the greatest problem with dashboard cracking.

## PROTECTION

The best way to protect your vinyl interior fittings is to:

- Keep it out of direct sunlight to minimise the effect of UV rays
  - Keep it cool by parking it facing away from the sun and providing some air flow (winding down the windows a fraction), or use a silver foil sun protector over the dash
  - Do NOT use a dash mat - they have an abrasive effect on the dash and remove the oils from the vinyl, leaving it chalky in colour
  - Use vaseline on vinyl or leather conditioner to keep leather soft.
- I am unable to endorse any proprietary products as I have seen too many dashes that have been "protected" using these products but are still cracking. Any product that can be used on vinyl, plastic or rubber must be, at best, a compromise.

Remember, it is not just heat that will crack dashboards, it is also sudden changes in temperature. A warm winter day followed by a very cold night can crack an already stiff vinyl dash.

It is my belief that air conditioning in cars leads to premature dashboard failure as the temperature changes are great and sudden.

Leather dashes do not crack in the same way as vinyl but they are even more severe in that they will shrink and distort the dash to the point where it is not repairable - Porsches are worst offenders in this area.



## REPAIR METHODS

There are several repair methods available for vinyl dashes. These range from cheap and partially effective to more expensive and highly effective.

### Vinyl welding

Small cuts and clean cracks may be repaired using vinyl welding. Larger cracks caused by sun damage may be repaired using this method provided the operator has the appropriate materials and level of skill. However, as the area needs to be heated sufficiently to melt the vinyl and provide a weld, further damage may be done to the foam underlay and cracking may occur alongside the welded area at a later date. Whether the repair is invisible will depend on the extent of damage and the skill of the operator. Ask the operator about a warranty!

### Dashcaps

Dashcaps are available for some popular models - these are a formed plastic or fibre glass mould that goes over the top half of the dashboard and covers the cracks. They are generally a good medium term option for the average owner but there are several things necessary to consider before fitting a dashcap:-

- They can be fitted without removal of the dashboard assembly, making them a lower cost option
- They may come with a limited warranty - 6 months.
- They must be allowed to "float" on the dashboard as they will expand and contract at a different rate to the dashboard underneath. Correct fitting is important.
- depending on the design of the dash, they may show a line where the cap meets the dashboard. They may feel "plastic."
- When they eventually break down, they are difficult to remove without damaging the dashboard
- They are only available for popular models.

### **Reskinning**

Dashboard reskinning is the best repair method short of fitting a new dashboard. It requires removal of the dashboard from the car and complete disassembly of gauges, vents etc.

Reskinning is performed by repairing all the cracks and then vacuum forming a new vinyl skin across the entire dashboard. It provides the look and feel of a new dashboard at a fraction of the cost of a new one.

As there is a second skin applied over the original, gauges and vents may fit tighter. This will depend on the model and can be overcome by careful trimming of the area or locally heating the material with a hot air gun and pressing the item into place.

Including the cost of removal and replacement, the price can be one third to half the cost of a new item. Normally a 12 month warranty will apply. In the case of the Dashboard Repair Centre, we apply a 2 year warranty - displaying the confidence that we have in our process.

### **REPRODUCTION DASH**

Some specialist builders provide a reproduction dash for selected vehicles. These are generally built on a fibre glass base. They can vary in quality from excellent to poor - the poor ones requiring considerable time and effort to bring up to a satisfactory standard.

They are generally moulded from an old dash and can be out of shape from the start. Often they are provided as a fibre glass shell and the buyer has to finish them off.

I would strongly recommend getting advice from someone who has fitted an identical item before buying a reproduction - particularly if it comes from interstate - it may be difficult to negotiate any issues.

### **NEW REPLACEMENT**

Obviously a new dash will have more appeal to some customers - it has the stamp of the manufacturer that means so much to some people. New parts are not available for all cars.

### **VEHICLE CONVERSIONS**

People performing left-to-right-hand-drive conversions will regularly manufacture or buy a fibre glass dashboard. This can then have a soft foam feel added and skinned with vinyl to provide a professional finish.

### **What else can the Dashboard Repair Centre do?**

- repairs to contoured/moulded door trims
- repairs to arm rests
- recolouring of vinyl and leather interiors - dashes, door trims, seats
- skinning of custom built speaker boxes
- manufacture of some late sixties style dashes - these have no framework, just a soft foam covered with a vinyl skin

Information provided by

**Harry Johnson**  
**Dashboard Repair Centre**  
**Factory 4, 166 Maroondah Highway**  
**Ringwood, beside Ringwood Lake**  
**03 9879 5535**



## Austin Morris Group

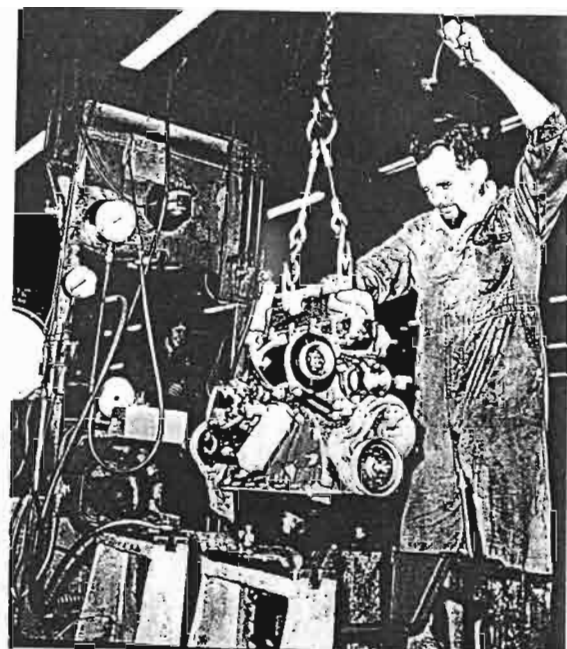
'Victory belongs to the big battalions,' said Napoleon, and the maxim is just as applicable to industry today as it was to the Emperor's armies. This is particularly so in the motor industry – a battle of the giants indeed, on a world scale. British Leyland's Austin Morris Group is one of the big battalions – it is the Corporation's largest operating unit, and is in its own right by far the greatest motor manufacturing organisation in Great Britain, with 80 000 employees, and a production of more than 760 000 cars and light commercial vehicles in 1972.

Austin Morris produces famous cars with front-wheel drive such as the Mini, 1100/1300, Maxi, 1800 and 2200 models, and the conventionally-designed successful Marina with rear-wheel drive. Over three million Minis have left the assembly lines since its introduction in 1959, and over five and a half million front-wheel-drive cars have been produced by Austin Morris.

The Group was formed in August 1970 from the Austin Morris and the Pressed Steel Fisher Divisions of British Leyland which had been established soon after the formation of the Corporation – the former embracing volume-car and light commercial vehicle production and the latter drawing together all the Corporation's main body-making activities. The next logical step was to integrate the two, so that design and production of both vehicles and bodies could be under a single control and the productive resources rationalised for greater efficiency.

There are two main operating Divisions – the Power and Transmission Division and the Body and Assembly Division. The Power and Transmission Division includes engine, gearbox and axle production, and has its headquarters at Longbridge, Birmingham; the Body and Assembly Division – with headquarters at Cowley, Oxford – covers body, radiator, heater and light press-work production, mainly in the Oxford area and South Wales.

Alongside the two Line Divisions are: Engineering, devoted to vehicle design and proving; Sales, covering the marketing of Austin Morris vehicles in the home market and their supply to British Leyland Inter-



**Below:** Austin shows its strength in the 1800 cc range recently.

**Below:** The new Austin Morris 1800. Annual sales of the 1800 range in the U.K. has approached 40 000 for many years.

**Below:** A 1622 cc 2-door 1100 cc 1100 cc on a testing at the Cowley plant.

**Right:** The Wolseley Six as seen in the 2227 cc engine.



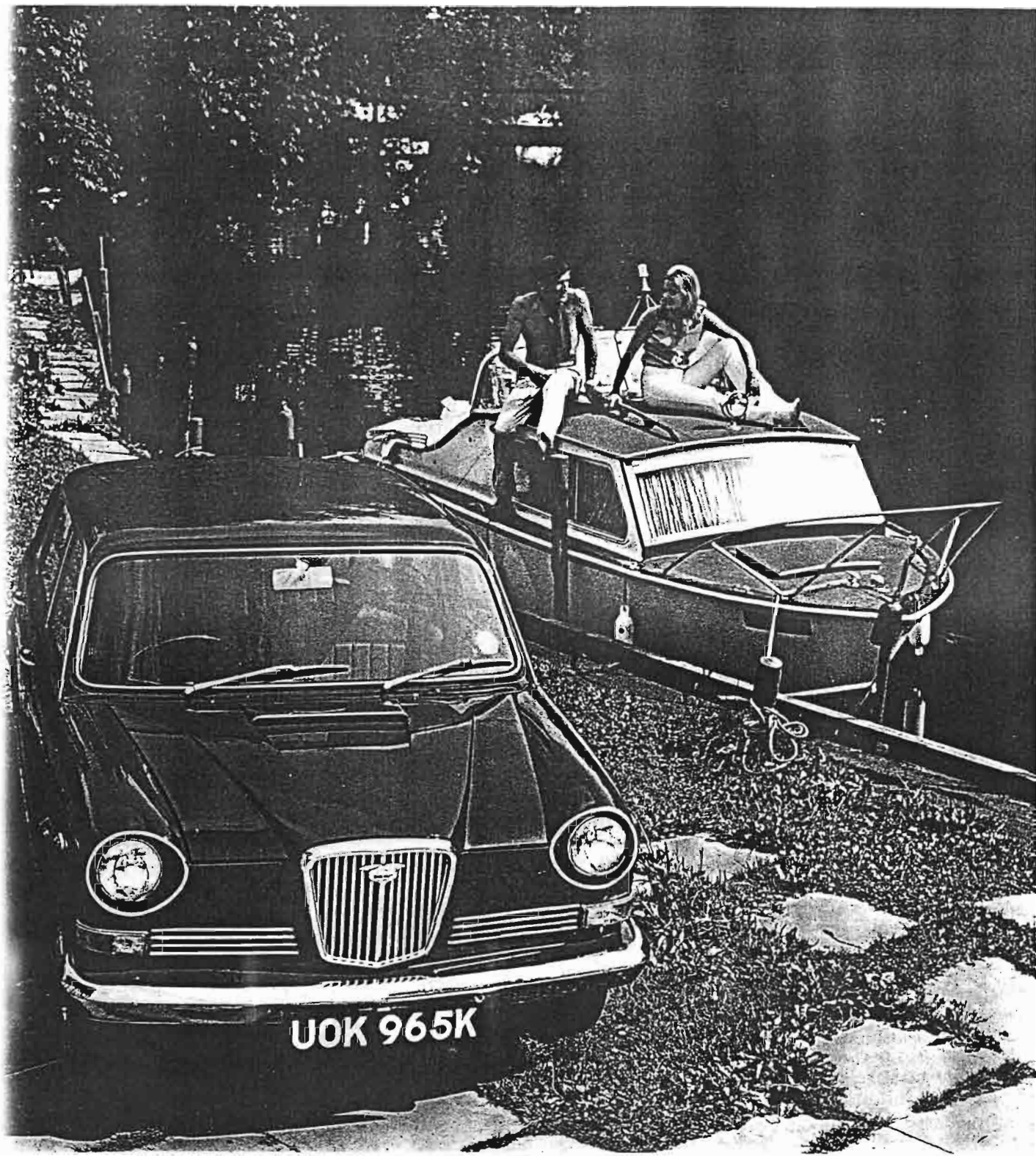
control of spare building

Finally, there is a Group Staff covering such important functions as purchase, finance, personnel, etc.

Austin Morris has been going through an intensive period of reorganisation to ensure the most efficient use of its productive resources and create new facilities where necessary. All this is based on a rolling five-year facilities and model programme so that the right models are built in the right place.

To understand what is happening, one must glance at the historical background. The ancestors of Austin Morris are the former companies bearing those names, two of the pioneers of the motor industry and of mass production in Great Britain.

Austin was founded in Birmingham when Herbert (later Lord) Austin bought a former printing works on the outskirts of Birmingham for £5000 (half of which he borrowed) and began making motor cars. Soon afterwards, in 1912, William Morris (later Lord Nuffield) one-time repairer of undergraduates' bicycles in Oxford, began







to make cars in a former military school at Cowley, Oxford, and now the home of Nuffield Press.

When the two merged in 1951 to form the British Motor Corporation, Austin and Morris were the country's biggest motor manufacturers, but their main plants were 60 miles apart. Morris, unlike Austin, preferred to make many of his major components such as transmissions and carburettors in his own factories, and so acquired a number of plants in the engineering-orientated areas of Birmingham and Coventry to feed his Cowley car-assembly plant. So there were two main groups of plants, one in Birmingham and one in Oxford, with body plants similarly divided (for the Fisher organisation and Pressed Steel in Oxford had joined the B M C).

All this resulted in long and uneconomic road journeys for major components, and the country road between Oxford and Birmingham was thronged with transporters carrying bodies—in effect, expensively transporting cubic feet of air. Other bodies and major sub-assemblies made expensive thirty-mile journeys round the Birmingham ring road from body to assembly plant.

This situation is being rectified in Austin Morris by creating two giant factory com-



British Leyland Mini Coatings. Over two million Mini models have been left the assembly line.

Left bottom:

The new Austin 2200.

Right:

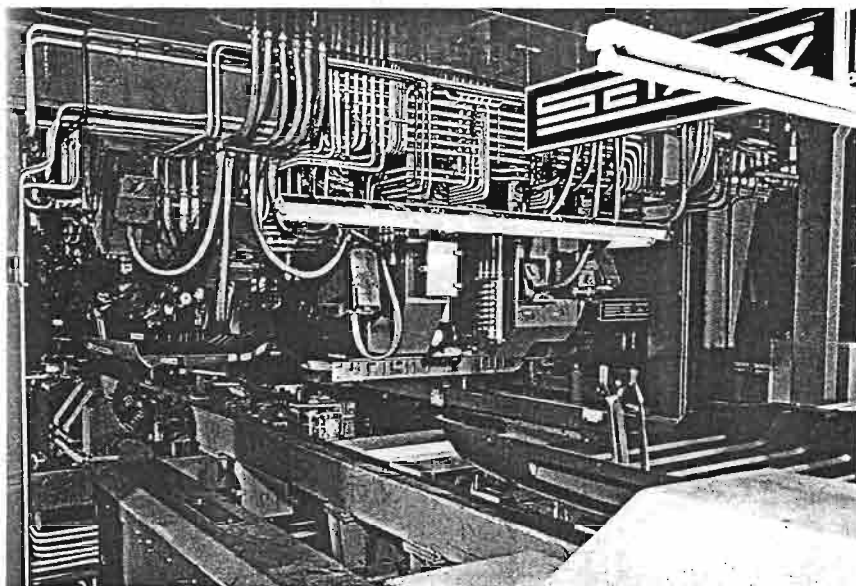
Door pocket produced by injection moulding at the company's Llanelli plant.

Below:

£2 million automatic machine for welding body front ends and underframes.

Bottom:

Austin 1300 family saloon car.



plexes at Longbridge and Cowley, where body and vehicle manufacture take place on the same site – with bodies carried to the assembly line a short distance by conveyor instead of along many miles of road. These complexes are based firmly on the model programme – they exist to produce certain models in their entirety.

The main aims of the Group's facilities plans are to:

- Increase productivity, improve quality and reduce costs by providing more efficient facilities using considerably less labour.

- Eliminate costly inter-plant transport of bodies and sub-assemblies.

- Concentrate production resources on the manufacture of basic vehicle types in high volumes, instead of producing many different types at lower volumes.

The first complex has been created at Cowley, integrating the former body production plant and the assembly plant – which were next door to each other – to handle the complete job from assembly of panels through to finished car.

The second is at Longbridge – already a huge car-assembly plant but where further body-making facilities of the latest type are being installed to do a similar complete job on a forthcoming new model. Both complexes will be described in more detail later in this section. Many of the body pressings come from Swindon, the Austin Morris Group's principal press plant. At present this modern plant produces panels for the Cowley and Longbridge complexes; these are components which nest into each other neatly and can be transported far more economically than body shells.

Component operations are being put together, too, in the interests of higher efficiency. A two-plant complex has been created at Llanelli in South Wales from the modern body plant and the radiator factory which lie half a mile apart. It turns out heaters, cooling and exhaust systems, and a variety of presswork. Heaters are now being designed and made complete, replacing former bought-out components.

In some cases plants with dissimilar products but lying near to one another are put together in 'operations' to be managed as one unit with common control systems. One of these is East Birmingham Operations, including the Common Lane body-pressings plant and the Transmissions Plant – which produces front suspensions and rear axles for all Austin Morris and some other British Leyland cars and is one of Europe's biggest concentrations of gear-cutting plant.

As a result of this reorganisation the supply lines for major components are being very much shortened and simplified – a process which increases efficiency and reduces costs.

Describing the complexes in more detail



and beginning with Cowley, the former Morris car assembly plant and the Pressed Steel body plant located there lie on opposite sides of a main road. Between 1968 and 1971 the two plants were completely integrated into one manufacturing unit, with covered conveyors crossing the road dividing the factories.

The assembly plant's South Works has been largely demolished and a new paint and assembly plant built in its place. The paint plant includes the most up-to-date electrophoretic priming and body painting equipment. This is a comparatively recent form of prime painting – known as the Electrocoat process and developed by Pressed Steel Fisher and ICI – in which the body acts as an anode and the paint is electrically charged and attracted on to the body. It ensures a uniform spread of paint to all parts of a car body, even where a spray-gun cannot reach, improving quality and reducing costs.

The Body Plant has also installed a new paint plant, incorporating the Electrocoat process, which now supplies painted bodies via the new bridge to the assembly plant's North Works.

Here in outline is how the Morris Marina range of cars is produced from body shell to complete car in the Cowley complex.

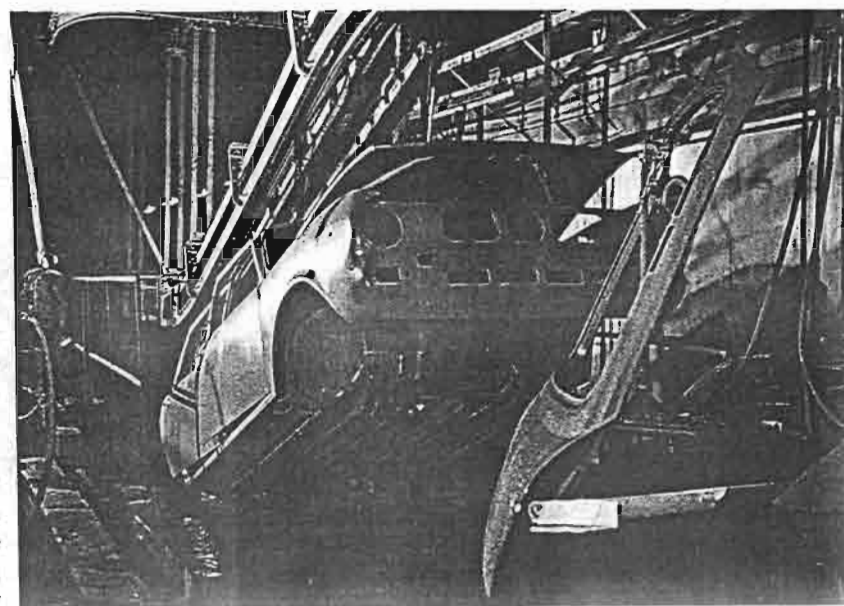
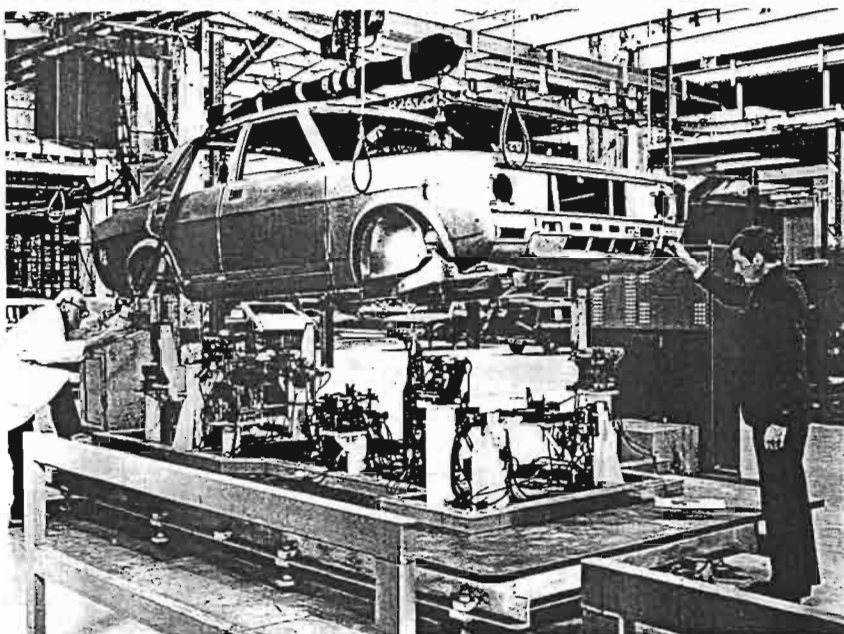
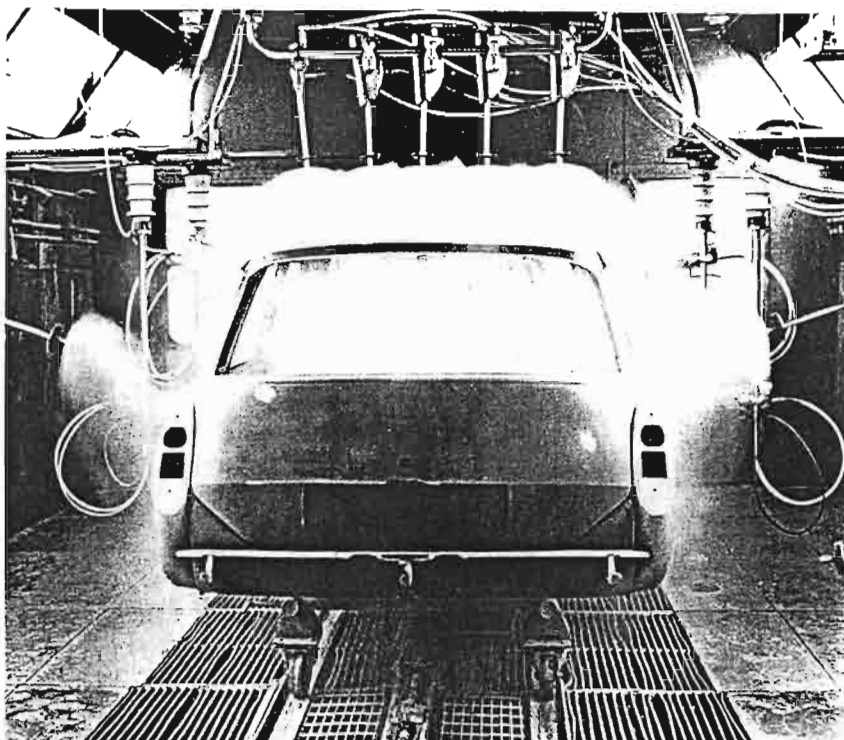
Marina body shells produced in the new Austin Morris body plant (on the site of the old Pressed Steel Fisher plant) are passed via a 716 m (2350 ft) long bridge to the new South Works where final assembly takes place. From the time that the body shell is constructed until the finished car leaves for the sales car park all the work takes place under cover.

The two- and four-door bodies of the Marina are of unitary construction – one single, strong unit. The body shells are designed for 'gate line' assembly (where the whole side of a car is assembled in a frame or 'gate') and for priming by the Electrocoat paint process. Major body assemblies are: the underframe, side panels, front end skin panel assembly, doors, roof, windshield, bonnet and boot lid. These are produced in their respective sections and transported by overhead conveyors to the body build line.

Three major sub-assemblies (front end, main floor, luggage floor) make up the complete underframe.

The front end is built on a continuously moving floor conveyor, and on completion each unit is automatically lifted on to a synchronized overhead storage and delivery conveyor. The main floor and luggage floor are built up and these are married with the front end in an automatic six-station multi-weld press.

Underframes are automatically ejected from the multi-welder by special-purpose handling machines and fed on to a storage conveyor for eventual positioning on a jig truck conveyor. The jig truck/floor conveyor



...product of the firm's...  
...Cowley.

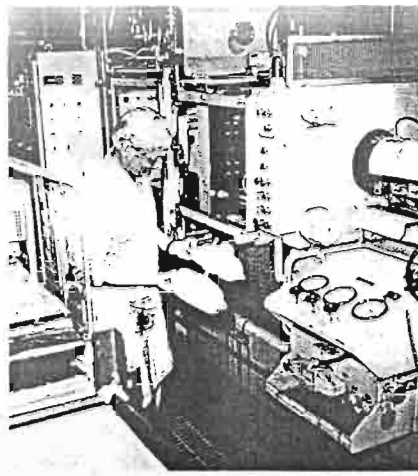
...for checking bodying  
...accuracy.

...The patented Electrocoat painting  
...process developed at Cowley.

Right  
Injection in building plastic expansion  
tanks at the Oxford plant.

Below  
The Austin 1300 front-wheel-drive car.

Bottom  
An Austin Maxi being used as an estate  
car.



consists of 48 identical...  
a mechanical track.

The car side panel assemblies are built up separately on the gates which give the production line its name. Sub-assemblies are transported by overhead conveyor for assembly into the side gates. Completed side panels and their roof panel assemblies are then loaded and locked automatically into the jig trucks to allow further welding operations to be carried out. Further assemblies are added until the body, complete with doors, bonnet, and trunk lid and all skin panels, is removed from the gate line.

Final adjustments to doors, etc., are made on the body finishing line where final inspection also takes place.

Bodies are then transported on a conveyor system via the new conveyor bridge to the assembly plant where they are received into a body-in-white store providing sequencing for two Electrocoat paint plants. After a seven-stage phosphating process, bodies are completely immersed in Electrocoat paint when an electrophoretic reaction takes place to deposit a uniform coat of paint on exposed body surfaces. Subsequent colour painting is achieved by a combination of hand and automatic spray processes. Undersealing is carried out automatically.

After paint processing, bodies are transferred to a buffer store providing some selectivity prior to the conveyor feed to the trim tracks.





painting process was one of their recent developments.

Another of their developments is 'Prestal' – a vacuum (or low pressure) formable super-plastic zinc aluminium alloy, produced in co-operation with the Imperial Smelting Corporation and Enfield Rolling Mills.

A further bodybuilding company within the Austin Morris Group is the Vanden Plas factory at Kingsbury, London, which covers 10 117 m<sup>2</sup> (108 898 ft<sup>2</sup>). Among its 300 personnel are many highly-skilled craftsmen who produce car coachwork to the highest standards of luxury and detail. All bodies for the Princess 1300 and for the Daimler Limousine are built by this company.

In addition to the car ranges, the Austin Morris Group manufactures a range of light commercial vehicles with payloads from 254 kg (5 cwt) to 1219 kg (24 cwt).

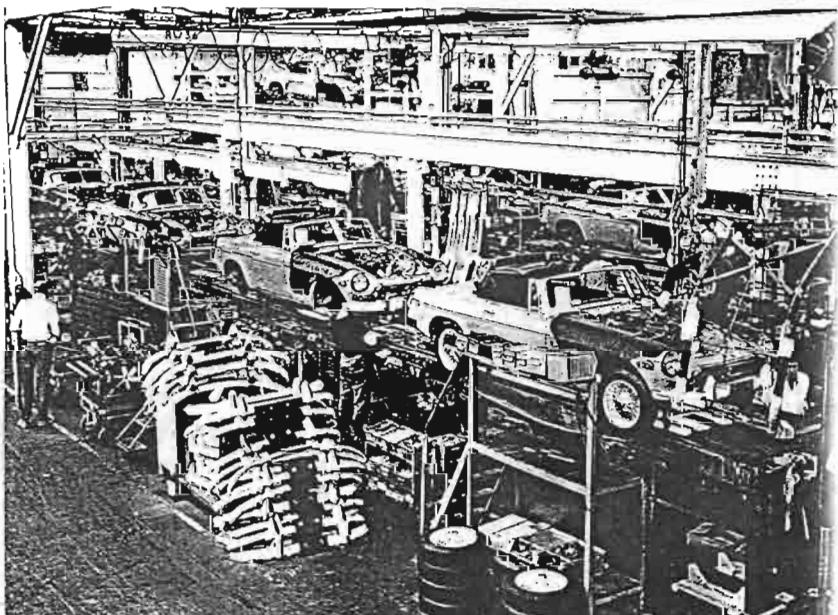
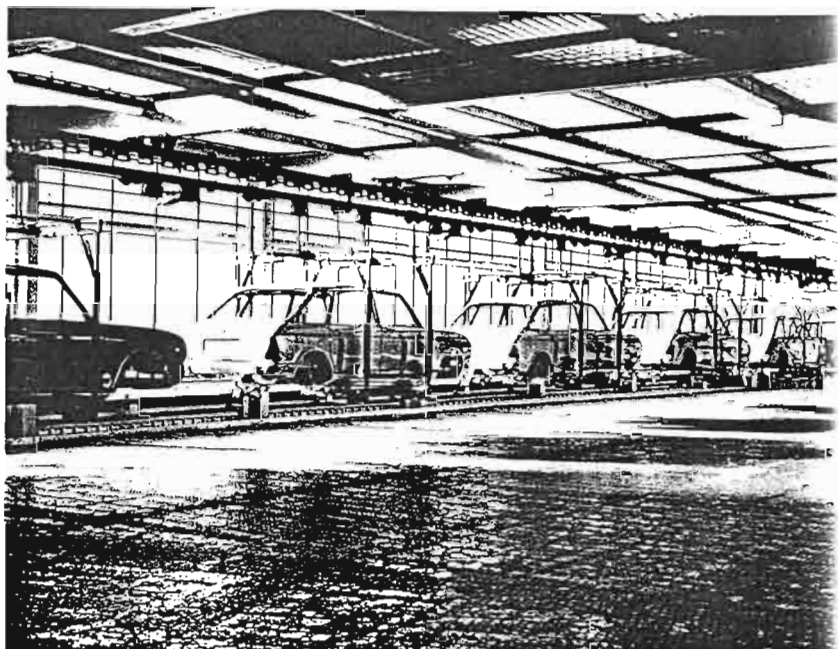
The 254 kg (5 cwt) Mini van is assembled at Longbridge from bodies built at the Castle Bromwich plant. It is one of the most popular of Britain's vans with car-derived units and accounted for 37 per cent of the UK market in 1972. It is marketed with either the 850 or 1000 cc engine and is available as a pick-up or as a 1.64 m<sup>3</sup> (58 ft<sup>3</sup>) van without the passenger seat.

A new range of vans, based on the successful range of Marina car models, is now in production at Cowley. The vans are available as 355 kg (7 cwt) or 508 kg (10 cwt) payload versions with a choice of 1100 cc or 1300 cc engines. They are marketed through Austin and Morris retail outlets in the UK and overseas.

In the heavier van range there is the 711/914 kg (14/18 cwt) J4 and the 1118/1219 kg (22/24 cwt) JU vans. The J4 has proved itself as a very successful competitor in the lighter end of this market, selling on its compactness and on its competitive price. The JU van, at its peak, achieved almost 30 per cent of the market. Both models are supplied as van, pick-up, and in chassis and cab form, the JU being also offered as a coach. The range has a successful export background, Austin Morris having assembly facilities in Ghana, Hong Kong, Malaysia, New Zealand, Nigeria, Portugal, Singapore and Turkey for their manufacture.

To maintain communications within its widely dispersed factories, the Austin Morris Group has a microwave network linking the Group's plants in Birmingham, Cowley and Swindon and the Corporation's headquarters in London.

The system is similar to those used by the Post Office, and consists of a microwave 'backbone' connecting the internal telephones at these centres. At each terminal





Top  
The 1000 cc engine bodies fully painted  
leaves the final assembly plant at Cowley.

Left Centre  
The final assembly line for MG sports cars.

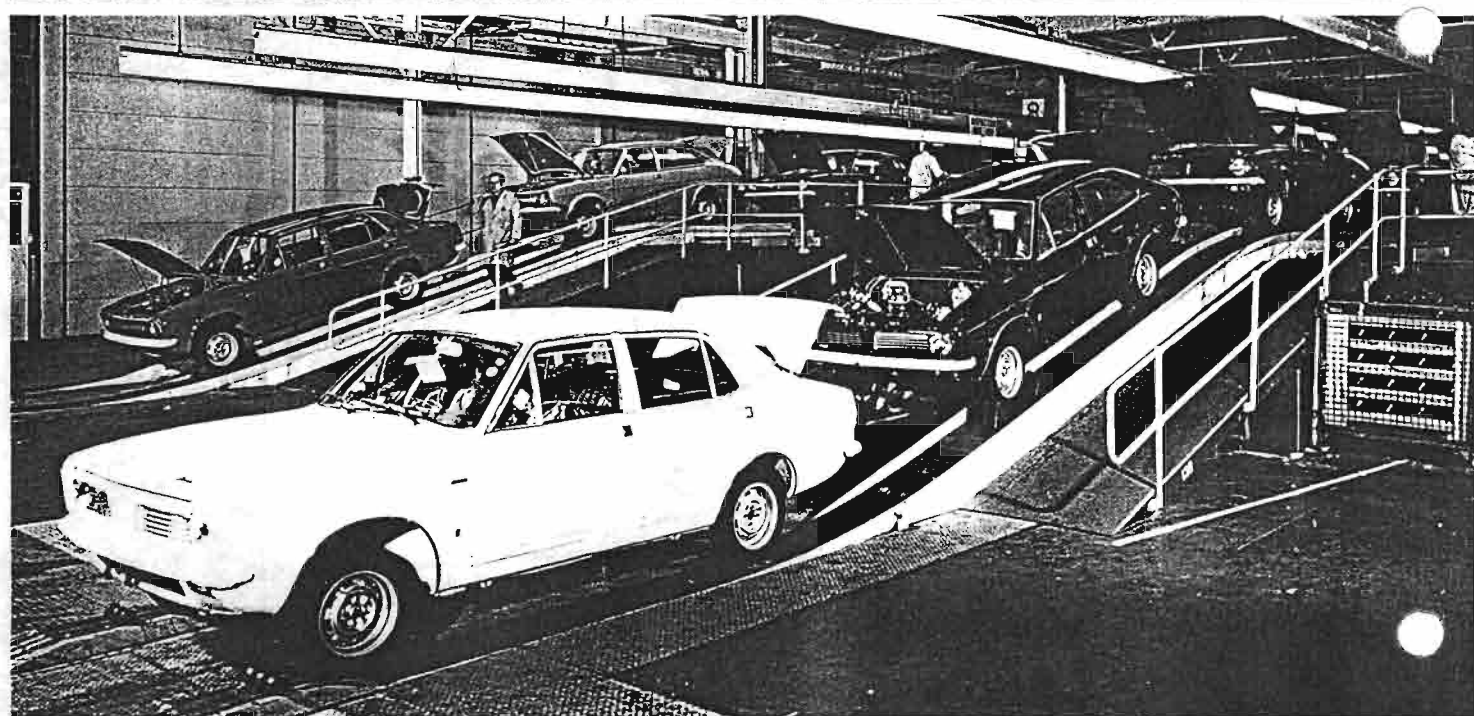
Left bottom  
Manufacture of light commercial  
vehicles.

Below  
An Austin Morris 250 JU van on  
Securicor service.

Bottom  
Finished cars leaving the assembly line.

station the signals from a number of tele-  
phone instruments are collected together,  
combined into one signal by special multi-  
plexing equipment and then converted into  
radio frequencies for transmission from a  
dish aerial. The reverse treatment is applied  
to incoming radio signals to 'unscramble'  
the separate telephone conversations.

The equipment is of the most modern  
design, employing transistors throughout.  
Signal frequencies are similar to those used  
in radar, and the main channel is capable of  
carrying 240 simultaneous telephone con-  
versations, or a 625-line television picture -  
making it possible in future to have 'visual  
conferences' in which plans and diagrams  
can be seen by executives many miles away.





# QUEENSLAND NEWS

Listed below are some important events for Landcrab owners in Queensland:

## SWAP MEETS

- July 26* **SUNSHINE COAST ANTIQUE CAR CLUB ANNUAL SWAP MEET** - Nambour Showground  
Enquiries phone: 07 5476 8388
- August 2* **ROCKHAMPTON SWAP MEET** - Rockhampton Showground -  
Enquiries phone: 079 361 377
- August 30 & 31* **JIMBOOMBA SWAP MEET** - Half way between Brisbane and the Gold Coast on the Mt. Lindsay Highway - Enquiries contact John Haken. 42 Merton St., Jimboomba
- Sept 14* **BEAUDESERT & DISTRICT RESTORED AUTO CLUB INC** - Beaudesert Showground  
Enquires phone: 07 55448174
- Sept 20* **27<sup>th</sup> ANNUAL GYMPIE SWAP** - AFL oval, Gympie  
Enquiries phone: 07 5482 2557 or 07 5482 5859
- Sept 26 & 27* **TOOWOOMBA SWAP** - Jondaryan Heritage Woolshed Park, 30 minutes west of Toowoomba  
Enquiries phone: 076 393 222
- Oct 12* **BUNDAMBA SWAP MEET** - Bundamba Public School  
Enquiries phone: 07 3282 5544 or 07 3288 8208

## OTHER EVENTS

- August 9 & 10* **SOUTH COAST RESTORATION SOCIETY INC ANNUAL RALLY** - Lot 59 Rifle Rang Road Willowdale - as well as cars they have a display of steam engines, stationary engines and tractors -  
Enquiries phone: 07 5596 0101
- August 5-16* **XXXX VARIETY CLUB BASH** - Enquiries phone: 07 5592 2788
- August 24* **BRITISH DISPLAY DAY** - Woolshed, Brisbane - for further details contact Peter Jones.
- Oct 10-12* **GOLD COAST AUTO EXPO** - Parklands Showgrounds, Gold Coast  
Enquires phone: 075529 1639
- Oct 19* **SANCTUARY COVE CLASSIC YACHT & CAR CONCOURS**, Marne Village, Sanctuary Cove  
Enquiries phone: 07 5577 6011

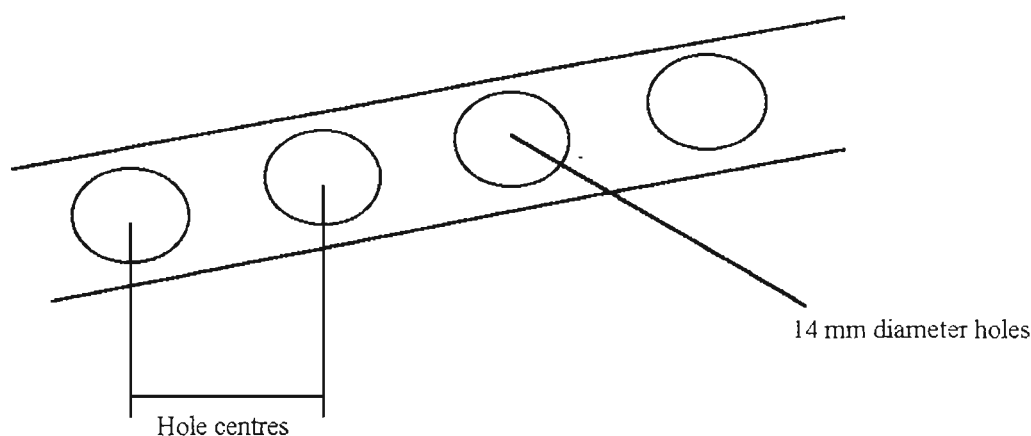
## HOW TO OR NOT TO LOSE WEIGHT

We all know that for a car to perform better, the less weight the engine has to move the better, even BMC knew this. When they prepared the 'Rally' Landcrabs they fitted them with a fibre glass bonnet, doors and front guards as well as perspex rear door windows, the weight saving must have been great.

But for us poor Landcrab owners these days the only possible way of saving weight is to fit perspex windows front and back. Well after studying photos of the works cars, I may have found another way of doing this.

What I noticed is that the works cars use a bonnet stay with a series of holes drilled along the surface, thus removing metal and saving weight. After much careful examination and enlarging photos from a book called 'Rally Cars given the works' I was able to determine that the holes were of 14mm diameter (see fig. 1 below).

Fig. 1



The top rod had 10 holes with a spacing of 26mm centres, with the first holes centre 45mm from the end. While the bottom rod had only 9 holes at 25mm spacing, 65mm from the end to the first hole centre.

So it was off to work with a spare support rod to do some drilling. Because drilling 14mm holes into steel is not the most easiest of tasks help was obtained from a fitter and turner that I worked with. After careful marking out of the stays and carefully setting up an industrial drill stand we were able to start drilling.

First a small hole was drilled, and then the size increased until the holes had a diameter of 14mm. This operation took some time as before each hole was drilled, the stay had to be repositioned in the vice that was holding it (for safety reasons the vice was bolted to the drill base).

After the drilling was completed and the burrs cleaned up, I knew that the weight saving must reduce the standing quarter mile time and increase top speed.

So now for the weigh in, fortunately I weighed the stay before the hole drilling (using the old cooking scales) and the weight was 320 grams. Now for the truth, the drilled unit was weighed, and it was 280 grams. This is a great saving of 40 grams or 1.4 oz, come to think of it my bonnet straps most likely weigh more.

At present I have not yet worked out the actual increase in acceleration obtained but I know its not as good as what can be obtained by the fitting a K & N air filter and a good flow through exhaust system (45mm diameter and a sports muffler).

PaJ April 1997.

## PJs TECHNICAL TIPS AND INFORMATION

### SPOTLIGHTS

To many an owner of classic Australian or British cars the fitting of spot lights is a good period accessory which also improves the looks of the car, but beware, different laws govern their placement and wiring.

Firstly the number of extra lights which can be fitted to a street registered vehicle vary from country to country, and even state to state (as in Australia), while some have no limit, others have a maximum of four or even only two extra lights.

The position of the lights is also important, here in Australia a minimum of 61 cm (2 feet) is required between the centre of any pair of extra lights (lights must be fitted in pairs only, no centre light). Lights below the bumper bar are classed as fog lights and must only be used in fog or heavy rain (day time only), while lights mounted above the bumper bar (to a maximum of 61cm) are classed as spotlights and must be controlled by the dip switch.

Another important point to remember when fitting spotlights is not to block the air flow through the radiator, this can have several adverse effects on the vehicle. Firstly it may overheat in hot weather, but there are other effects which most owners will not know about. These are, if the car has an automatic transmission, this may also overheat, some times before the engine, while if you have air-conditioning fitted you could reduce its cooling which could overheat the engine.

Also beware that most alternators or generators fitted to classic cars cannot supply enough power to keep the battery charged if the spot lights are used for a long period of time, which could mean being stuck with a flat battery.

On my classic car I have fitted four spotlights, two (the inner pair) aimed directly down the centre of the road while the outer pair are aimed, one to the left and one to the right (BL works style). The idea being that on long straight roads I use the inner pair, while on winding roads I use the outer pair.

The wiring and cable size is also very important, and it is recommended that you refer to the following diagram (fig 1) and cable size table before fitting any accessory to your classic vehicle, if you do not you may end up with a burnt out wreck.

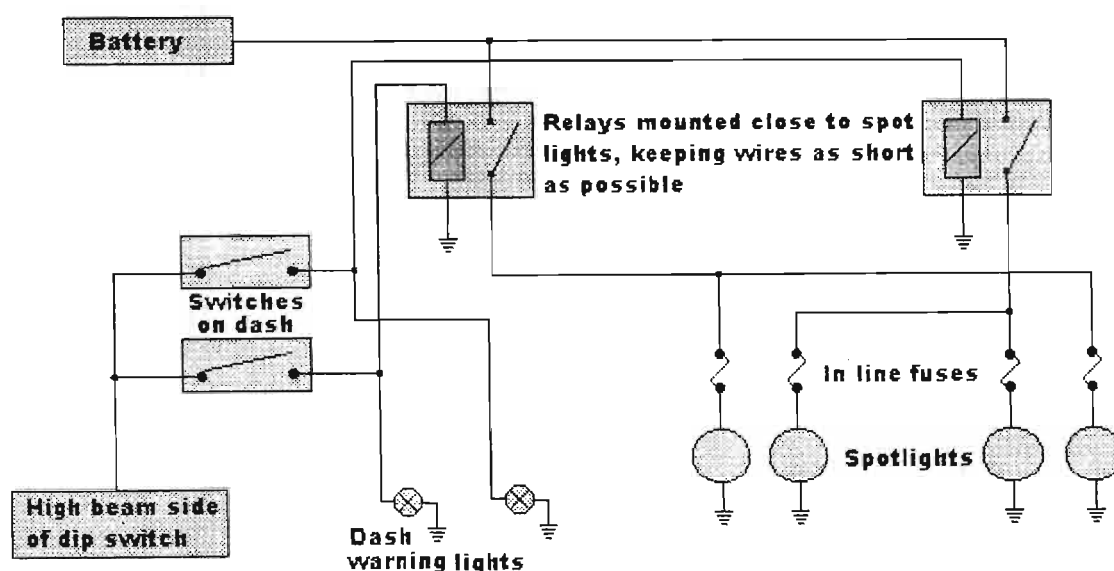


Figure 1

### Table of cable sizes and loads

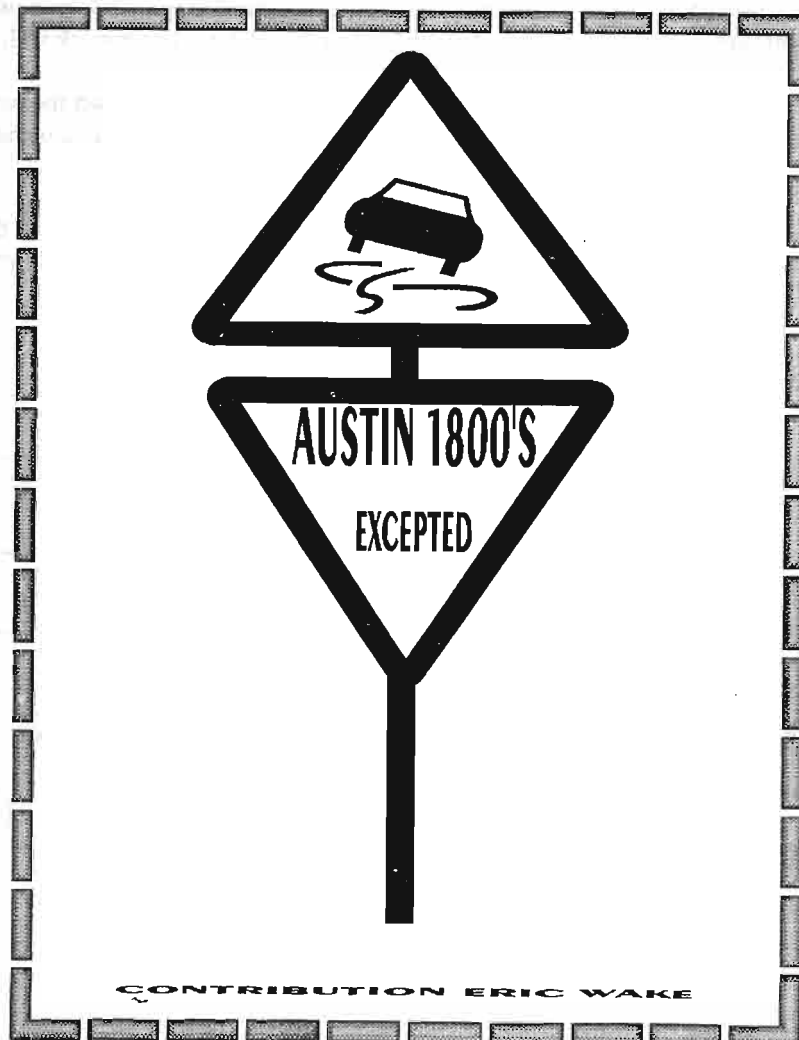
Imperial cables		Metric Cables	
wire size	load (amps)	wire size	load (amps)
9 / 0.012	5.75	9 / 0.03	5.50
14 / 0.010	6.00	14 / 0.25	6.00
36 / 0.0076	8.75	14 / 0.03	8.50
14 / 0.012	8.75	21 / 0.03	12.75
28 / 0.012	17.5	28 / 0.03	17.00

As most spotlight globes are rated in watts, you will need to know the formula to covert this into amps, which is quite easy, all you have to do is to divide the wattage by the battery voltage as shown in the two examples below,

a 12 volt system using a 55 watt globe equals, 4.6 amps  
a 6 volt system using a 55 watt globe equals, 9.2 amps

One important point to remember is to keep the wires to any accessory as short as possible, because the resistance of the wire will cause a drop in voltage to the accessory and in the case of spot lights reduce there lighting power. Also use the largest cable size that is practically possible to help reduce voltage drop, remember the larger the cable the smaller the voltage drop, and the brighter the lights will be.

PaJ December 1996.



# Money Bag's Report

By Pat Farrell

The financial statement for the fiscal year 1996/7 is published in this edition for perusal..

Although we are still operating in the 'black' the committee has decided to increase membership fees by \$1-00.to \$30 per annum. The main reason for the increase is because we are now paying for printing of the newsletter, which has greatly added to the cost of running the club.

The spares operation is still operating well. However, the fluctuating value of sterling against the Australian dollar has affected our buying cost. At the moment we are absorbing the increase. We will be reviewing this shortly.

Also this year, I decided I could no longer subsidise the freight charges and postage on spares orders.

The financial position of the Club will improve when the bulk of the memberships for 1997/8 come in.

## Financial Statement 1996/ 97

### RECEIPTS

membership subs 1996/7	\$2564-00
membership subs 1997/8	\$ 326-00
part sales	<u>\$1517-00</u>
	<u>\$4407-00</u>

Bank balance as at 1/7/96 \$1419-45

Total receipts{ including bal] \$5826-45

Stock on hand [spares] \$2120-00

Bank balance as at 30/6/97 \$1126-52

Includes interest of \$27-47

### EXPENDITURE

Spare parts purchased	\$2341-00
Customs duty on them	\$ 279-50
Telephone/ postage including [ newsletter posting]	
D Stephens	\$1341-50
Stationary D Stephens	\$ 61-76
Postage/Phone P Farrell	\$ 117-35
Postage spare parts	\$ 249-85
Parts Books	\$ 25-00
Brochures Library	\$ 140-00
Yellow pages	\$ 78-00
A.C.C.M. susscription	\$ 61-75
Landcrab club U.K.	\$ 33-00
Corporate affairs	\$ 134-00
Newsletter printing K Douglas	\$ 461-87
Newsletter printing D Stephens	\$ 160-00

**Total Expenditure \$5453-58.**



## AUSTINS OVER AUSTRALIA - TOOWOOMBA EASTER 1997

It was a dark and stormy night (morning actually) when my dear wife/navigator/advisor and myself set off from Sydney and headed for Toowoomba Queensland, where we would step back in time (EST) and into the only city in Queensland where they have all 4 seasons in the year (and some local folk say all in one day).

We travelled north to join up with the NSW Austin Motor Vehicle Club, catching up at Scone on the Wednesday evening, then onto Armidale the next night. About 15 cars left in convoy and we arrived north in smaller groups at different speeds with some cars playing 'tail end charlie' to ensure everyone made it. CB radios are excellent on these trips.

The days were beautiful and warm to hot and so were some of the cars. Before leaving Sydney I performed my normal service on the Kimberley, checked the tyres for tread, polished the hubcaps, vacuumed the ashtray, adjusted the badges and found all to be A - OK. We always travel with enough spares to rebuild a number of Kimberleys on the basis that if you're got it then you won't need it. This has always held true for me and this time was no exception. The bit that broke I didn't have! My brake power booster gave out on Easter Sunday at the furthest distance from Sydney (and my spare unit) that it could have and ensured a slow and muscle building trip home.

Our cars all made it to our Motel in Toowoomba on Friday afternoon and we went to the Newtown League Club where the host club were well set-up to hand out the goodies. Electric Blue shirts, sloppy joes, mugs, patches, booklet and all manner of pamphlets in the bag. After a long day on the road we retired to our motel for dinner and reading the AOA booklet and informative pamphlets that brought us up to date on Queensland road rules (oxymoron), breast and testicular examinations and Catapillar tractor parts. In all, an enjoyable evening.

Saturday was bright and sunny and we all converged on the Newtown fields to assemble for an inspection of the Cobb & Co Museum and then after, displayed in Club order back on the field. About 150 Austins in one place was a sight to behold. There were only about a dozen Sevens at Toowoomba, because the other one hundred were on the Sunshine Coast celebrating their 75th Anniversary. Cobb & Co is a must see museum and we learnt that 14 passenger coaches were phased out in Queensland in 1924. It took this long for the Sevens to make it out that far.

Saturday night back to Newtown Leagues Club for dinner. They split up all the clubs and states so that we all had new people to talk to. I've found that most Victorians and Queenslanders (and others) aren't all that different to us. Gee its a small world. Another thing I found out was that no one owns only one Austin. With about a 150 Austins there and all of them having at least one brother and/or sister back home or another brand from a mixed marriage, there would have been at least 400 cars being owned and cared for by this group.

The food, company and venue was enjoyable and we looked forward to Sunday.

Sunday dawned bright and beautiful again. We assembled at the Leagues Club, at some ungodly hour (8am) and drove in convoy out to Jondaryan Woolshed, about 25miles from Toowoomba. There we were, a snaking line of Austins on a long and winding road out to Jondaryan.

We were organised into model and year on their grassed areas, supplied with a bush tea and damper morning tea and a 'bush tucker' hot baked meal for lunch. Amongst the contingent were A40's most, Maxi least, A30's everywhere, three A40 Somerset convertibles together in one spot, two A40 sports, only about a dozen 1800's and Tasman /Kimberleys. Hope to see more Landcrabs in the future.

Jondaryan also has been collecting old tractors, stationary engines, trucks etc for many many years and has hundreds of them under cover. 1906 was the oldest that I saw. Back to the Club for dinner and decision about who and where AOA next time.

We were keen for NSW to hold the next one and keep the movement going. The word was that WA was ready to serve if called but SA came forward and most thought that SA was a nice place to go in 1999 and voted that way. All those grapes probably had something to do with it!

Many people left to go home on Monday, but for those left there was a trip about 20miles out of town to Brian Coughran's collection of old tractors, trucks and farm machinery in about half a dozen sheds (seventh heaven), and funny enough all the ladies congregated around the tea urn and chatted about what a wonderful place we had come to again. There was magnificent collection of stationary engines if you're into this sort of thing.

There were 34 Clubs from all over attending this AOA meeting. Officially there were 142 entrants but there seemed to be more on the day.

We travelled home through the back roads of Qld and NSW, and on some dirt, cruising with an A30 and two A30's and loving it. A good weekend was had by all.. Hope to see you all next AOA in South Australia.

Allan Hogg





## THE APPLICATION OF *MODERN* *TECHNOLOGY*

Virtually any variation of the original specifications of our vehicles may be viewed as a slap in the face to the original design team. However, modern cars, by virtue of their extreme light weight and / or large engines do show that under some circumstances our vehicles could accept a slight power increase without problems.

The traditional method to bolt on more poke was twin carburettors. For the Tasman & Kimberley owners, the obvious way was the twins off the Mk 1 Kimberley. Care does need to be taken because the early cars had side draft carburettors which are inclined to flood at regular intervals. The later semi down draft system is the preferred option. With the exhaust manifold cast with the inlet manifold, the exhaust system does not pose a problem. To obtain better idling on a hot day [ this naturally does not concern those misguided enough to reside in Sydney ] the inlet and exhaust can be separated by hacksaw. This causes the carburettors to run cooler, thereby preventing the petrol vaporising. A triple carburettor manifold can be made up by welding together two twin carb manifolds from a 4 cylinder E series engine

If one fits the English 1800 S twin 1 3/4 S.U.s and Dowton extractors, the vehicle like the twin carb X6 may still therefore be claimed to have original specification.. One does need to make up a heat shield for the 1800- they do not appear to have been standard in England- to avoid idling problems ala Kimberley. Also , there may be a fouling problem with the brake power booster. This is usually solved with the Kimberley power booster bracket , but then the radiator over flow needs to be re manufactured to a different shape, or re located. The usual spots are over by the fuse box or Morris 1100 style on the grill Extractors -no matter how well designed- are nowhere near as serviceable [another way of saying user friendly ] as the standard manifold. For example, on my twin carb and extractors 1800 , the extractors and twin carbies have to be removed prior to removing the engine. To remove the extractors necessitates removing the passenger side rear engine mount This usually involves a visit to the chiropractor shortly after. Twin carbies appear to add 10% power to an 1800 and 15% to a Tasman/ Kimberley.

*Enter modern technology..*

The fuel Star is a small canister inserted into the fuel line. I have no idea how or for that matter why it works. But people whose opinions I value say it boosts power by about 10% and performs a similar miracle on the fuel economy. Club member **Albert English** has used a similar system with great success for several years. A bonus is that it enables us to run

unleaded should the Government pull the plug on super. Almost impossible for even the keen observer ie wife & hereafter refereed as the was committee to see it.

10% on to the early 82 HP 1800 makes it around 90 HP. The 115 HP Mk 1 Kimberley goes up to 126 HP The fuel Star is \$350-00 fitted, or \$350-00 unfitted. It comes with a 5 year guarantee.

The next modern piece of wizardry is the Ecotherm . Featured already in this rag I mean mag it feeds the engine hot water instead of cold. The idea is that the head is where the engine heat is generated. This heat is used to heat the block and the surplus is fed to the radiator. Quite a few modern vehicles are using this system. A variation is to pump the water backwards through the engine, thereby giving the same result. Thought to give about 10 % more urge, with a pleasing gain in flexibility and smoothness. The early Mk 1 1800 is now up to 99 HP, and the Mk 1 Kimberley- 138 HP A person not familiar with the under bonnet layout of our vehicles would not notice the difference . Originality may therefore still be claimed.

Now for the roller rockers [1800 only ] The **Yella Terra** ones are the pick of the bunch because they open the valves wider One did not receive much change from \$1,000 which meant that very few sets were sold.{ Our Editor has them which may mean he has more money than sense ! } It is understood that the system has been redesigned for a manufacture at a more sensible price. One hopes so. These also seem to give about 10% more go . Completely invisible and therefore original unless the oil filler cap is removed .

So the 1800 is now up to 108 H.P, and the Kimberley still at 138 H.P.

**YES PLEASE !**

]



## **POWER ASSISTED CLUTCH FOR 1800**

**BY LEE NICHOLSON**

In order to lower the load on the left foot, the clutch was **power assisted** by fitting a PBR VH 44 [ 7" diameter ] brake power booster to the clutch hydraulic system. The VH 44 is a remote power booster for brakes, and has been successfully powering my clutch for 8 years.

The load on the left foot was 42 lb standard and 21 lb after the modification. It was done as an alternative to fitting automatic transmission.

The displacement of the VH 44 hydraulic was matched to the master cylinder and the feel is retained.

The unit was fitted in the battery area and the battery was relocated in the boot with the cable placed in the roof internal gutter area.

# SPARE A THOUGHT

by Pat Farrell [03] 9762 4457 No calls after 9-30 pm EST !!

## stickers

Hot run - electronically tuned	\$3	
Floats on fluid- external	\$8	
Travelling 1st class - external	\$8	
B,L. Motor sport	\$8	
Left and right hand weathershields- clear or tinted	\$50 each	
X6 Complete front parker assembly	\$ 5 each	
1800 Complete twin 1 3/4 SU with manifold and linkages		
from English 1800 S	\$250	
1800 Downtons extractors [ from 1800 S ]	\$200	
X6 oil cooler adaptor	\$30 each [ 1 only ]	
Suspension Ball joints	\$60 each	
Front windscreen rubber, with filler strip	\$60	
Oil filter adaptor Z23 to Z9	\$ 8 change over	
Constant velocity joint	\$70	
Blinker stalks [1800]	\$50	

## POLYUTHERANE

Rear engine mounts	\$25 change over
Front engine mounts	ditto
Bump stops upper and lower	\$20 pair [ i side] change over
engine steady bar bushes	\$15 set of 4
lower fulcrum bushes	\$20 a set [ both sides]
Vibration mounts for gear change, exhaust etc	POA

*Prospective buyers should note well that the Club buys and sells all parts in good faith. Warranty claims should be made through the Clubs original supplier, and/ or Aussie post as applicable*

*Also, the spares are for **Club Members only** !*

# FROM THE BACK SEAT

## **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell                      03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

## **REGALIA OFFICER**

Mike Gilmour                      047 81 8887  
Lot 57 Remembrance Drive  
Tahmor NSW 2340

## **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

## **PUBLIC OFFICER**

David Hopper                      [ 076] 333 383  
8 Evergreen St, Toowoomba QLD 4350

## **EDITOR/ SECRETARY**

Daryl Stephens                      03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

## **A.M.V.C. Sub Committee**

Pat Farrell                      as above  
Geoff Marshall                      03 9877 1425  
19 Anne Street, Blackburn Vic 3130

## **SOCIAL CONVENORS**

*Brisbane;* Peter Jones as above

*Melbourne;* Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489

*Sydney;* Mike Gilmour as above

Opinions expressed within are not necessarily shared by the Editor or Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

Cut off date for inclusion of articles in the newsletter is the 25 th of the even month. Publication date attempts, often in vain to be 25 th of the odd month

# THE GOOD NEWS

BY PAT FARRELL

**CLUB FEES** are due Subscriptions must be received by **15/8/97**. Please remit **\$30** to

The Landcrab Club  
22 Davison Street  
Mitcham Vic 3132.

Also, the secretary would like your a/h phone number  
as most have changed.

# GRIPPY RUBBER PRODUCTS

**Tel: 9683 3407**

HOSE & CORD  
REINFORCED HOSE  
PVC TUBING  
STRIP, SKIRTING  
SPONGE SHEET  
SPONGE STRIP  
SPONGE CORD  
MATTING  
RIBBED MATTING  
FLOORING  
SHEETING  
INSERTION  
NEOPRENE SHEET  
STEPTREAD  
BUFFERS  
BUMPERS  
RUBRAILS  
"U" CHANNELS  
"D" FENDERS  
WHEELS, ROLLERS  
"O" RINGS  
GROMMETS  
CHAIR TIPS  
END CAPS  
PLUGS, STOPPERS  
WEATHERSTRIPS  
PVC STRIP DOORS  
PIPE INSULATION  
HORSEFLOAT MAT  
LIQUID LATEX  
RTV SILICONE  
CLOTHES HANGER

**AUTOMOTIVE**  
**RESTORER PARTS**  
**VINTAGE/VETERAN**  
DOOR SEALS  
WINDOW SEALS  
BOOT/LID SEALS  
MOUNTS  
SHACKLE BUSHES  
BUSHES  
FUEL LINE HOSE  
PINCHWELD SEALS  
CAR HEATER HOSE  
PEDAL CAR/TOY  
RESTO PARTS

**TRUCK PARTS**  
TANK STRAPS  
DOCK FENDERS  
GUARD FLARES  
DOOR SEALS  
WINDOW SEALS

**MARINE PARTS**  
TRAILER PARTS  
ROLLERS  
RUBBING STRIPS  
WHARF FENDERS  
GUNWALE RUBBER  
SPEAR-GUN RUBBER



12 Kleins Road, Northmead, 2152. PO Box 44 Regents Park, 2143  
Fax: 9743 8367

A Minister was asked to give a talk at a local women's health symposium. His wife asked about his topic, but he was too embarrassed to admit he had been asked to speak about sex. Thinking quickly, he replied, "I'm talking about sailing."

"Oh, that's nice," said his wife.

The next day, at the grocery shop, a young women who had attended the lecture recognised the minister's wife. "That was certainly an excellent talk your husband gave yesterday " she said." He has a unique perspective on the subject."

Somewhat puzzled, the ministers wife replied, "Its odd that you should think so. He's only done it twice. He threw up the first time and the second time his hat blew off."

# FOR SALE

**FREEBIE** Engineless Mk 1 1800 auto Woolongong N.S.W. [042] 297 369

1800 Mk 11 Man 86,000 Unreg. E.C. 1970 offers- plus a Mk 11 Ute in poor condition  
David Thompson [067] 297 028 **Graves End N.S.W.**

Mk 11 1800 Man. No reg or RWC Needs minor rust repair one owner \$500 ish Michelle  
McLeod [03] 5995 0067 Roville Vic.

Mk 1 1800 {October '68} manual **plus** Mk 11 auto Best offers or swap for the needed bits  
under Wanted Russell Greenwood [03] 52 297780 Geelong Vic

Mk 11 1800 1969 Man average condition Don Ostapovitch **\$500** 3287 6767 [Loganholme  
QLD]

Mk 11 1800 Top condition 67,000 miles Man 12 months reg Hilary Jepson [07] 5546 3125

Mk 11 1800 Auto **one owner** 105,000 miles auto rebuilt- engine shot one rusty door  
White/ Gold Reg but no RWC Max Austin [03] 9802 6824 \$950

Mk 11 1800 Grey/ Green Reg, but no RWC 2 owners Manual 110,000 Edithvale Vic  
**\$300** Ben Sinclair [03] 9772 3748 Not the greatest example.

Mk 1 1800 1965 Blue / beige man \$2000 76,000 **Factory sun roof** Brian Sinclair [03]  
9772 3748 Interested parties should speak to Pat Farrell who has seen the car.

Mk 11 1800 1969 G.C. also another Mk 11 for spares \$900 negotiable for **the lot ask for  
John** [03] 9354 2874

Mk 1 1800 1965 Resprayed red GC Vic butler **Colac** Vic \$800 [03] 5594 7249 Vic  
Butler

Mk 1 1800 Man **Lynx head** new hydrolastic suspension- reconditioned brakes- etc many  
parts Cedar green \$2,500 Marg Withers [029] 660 4960 Penrith Sydney

Mk 11 Kimberly 1972 Auto Gold / black Reg till Oct. Christena Frankie [047] 353 907  
{Somewhere in Sydney} Genuine reason for sale **Offers**

Mk 11[ Probably ! ] 1800 68 Auto Mentone Vic 90,000 miles one owner reg till Sept  
Russell [03] 9584 6993 **\$650**

Mk 1 1800 Some work done to build it into a rally car ie Quick rack steering, adjustable  
front end , bigger rear hydro units etc **\$1,000** Simon Young care of Club Member  
Paul Nicholls [03] 9752 1489

Mk 11 1800 **without a clutch** [ Manual ] Mustard with white doors Roz [03] 9387 4941 \$300

# WANTED

Mk 11 Engine or Engine/ Man gearbox in good condition **Also** ute rear bumpers,  
hoops,toneau. either type of tow bar Russell Greenwood [03] 5229 7780

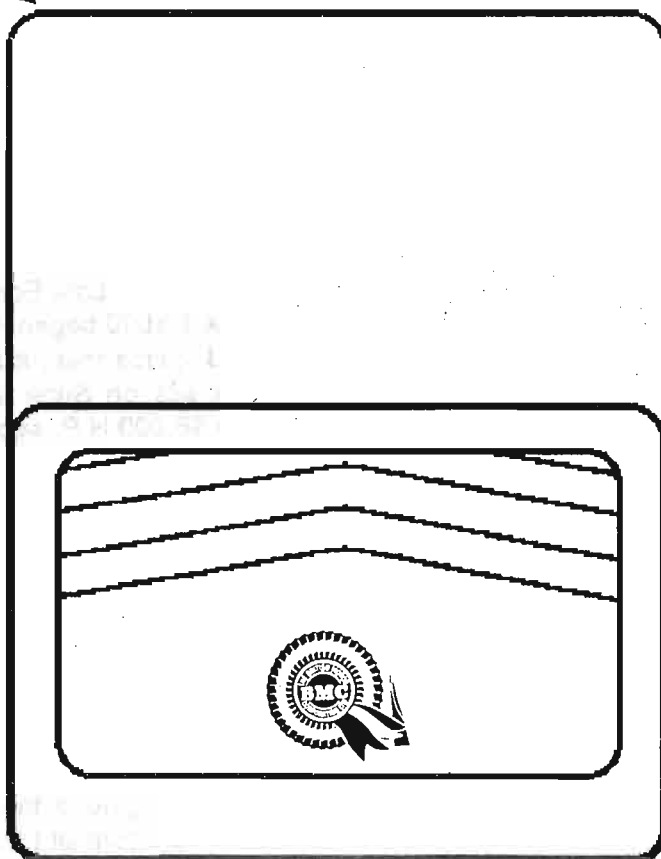
CLASSIC NOT PLASTIC

# LANDCRAB



The newsletter of the Landcrab Club of Australasia Inc. Issue number 76, October and November 1997

REMANUFACTURED!



The club has organised the remanufacture of these original BMC rear mudflaps

only \$45 a set

Contact Pat Farrell (03) 9762 4457





# INTRODUCING...

James CHARMAN                      40 William Street                      [03] 9466 4776                      Mk 11 1800  
Lalor Vic 3075

One family had owned my car from new. I bought it last February with 69,500 on the clock.

Graham HALLORAN                      56 Farquhar Street                      [065] 530 164                      Mk 11 1800  
Wingham N.S.W. 2429

A big welcome back to a dedicated Kimberly man, who needs no introduction. But where is the Kimberly ?

Robert ALYARI                      4 Agathea Court                      [03] 9785 2728                      Mk 1 & 11  
Frankston North Vic 3200                      1800 s

Robert was in the Club for 7 1/2 minutes before he bought our last set of twin S.U.s

Mathew DREW                      16 Schrubby Walk                      Mk 1 1800  
Croydon Vic 3136

For Victorians, Mathew needs no introduction as he is a past Editor and President of the Austin Motor Vehicle Club of Victoria. His mk 1 1800 began life as an automatic, but was converted to manual when the auto died. Since then, it has been treated to a bare metal respray in the original cream. It sits on Supa lites and has tinted windows. By the time this article goes to press, a \$6,000 H.P. **super charger** will have been installed by Link Automotive.

Shannon LEE                      3 Deanswood Road                      [03] 9878 3679                      Mk 11 1800  
Forest Hill Vic 3131

Shannon was fortunate enough to have his 1800 given to him by his grandmother

Laurie CAMERON                      913 Riversdale Road                      [03] 9836 6406                      Mks 1 & 2  
Surrey Hills Vic                      1800

Those who are considering, or going to consider, bringing in the Austin Ambassador automatic transmission written up in this epistle, should consult Laurie, as he may also do it. The freight savings may be considerable.

---

A Priest and a Rabbi were seated in a train both doing the same cross word.  
" 2 across. A four letter word for what sits in the bottom of a bird cage- first letter is s "  
"Easy- seed "  
"Could I borrow your eraser, please ? "

# DAN'S (AMATEUR) GUIDE TO A BUDGET AUTOBOX

AFTER much bodywork repairs (ie wings, sills, floors, posts and arches) we deemed PDF 414G ready for the road, and for the wedding and for the subsequent honeymoon, after which the old 18/85 returned to normal duties.

It was after Christmas that I noticed there was a knocking sound at high rpm. Soon after that the gearbox was slow to change and then on a cold morning on the way to work it decided not to bother at all!

After draining the oil and removal of both pans, various adjustments made the car seem OK. Hooray! For a month anyway, time to get a more powerful radio perhaps?

It was then that I decided something had to be done as it was obvious the problem would not improve with age. But what to do? Here were my options:

## 1. Convert autobox to manual

Requires pedalbox, engine adapter plate, manual gearbox, complete clutch assembly, hydraulics and housing, gear lever assembly, plus lots of work.

## 2. Fit reconditioned autobox

Requires recon box and lots of money.

At the time these were my choices. So, after looking at my budget and much soul-searching I decided to go manual! I turned to the Club, as I always do when I'm in it up to my neck, and discovered that there was in fact an extra option.

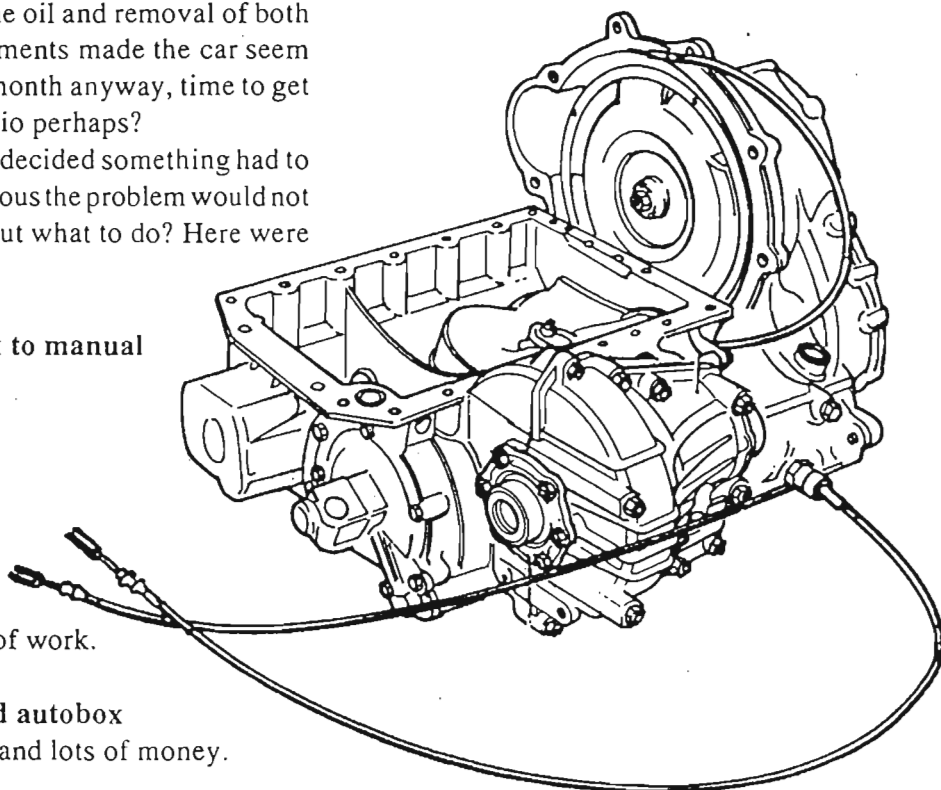
## 3. Fit a brand new autobox (yes!)

Requires brand "spanking new" Austin Ambassador autobox. What?! Why?! OK the reason is they are very cheap and they fit with only a few changes to the original 1800 layout.

I would advise all auto owners to listen to this. The gearbox is £50 plus VAT and that's not a misprint. The part number is DAM4579N (for new).

## MOTOR MOUNTING

OK, now here are the differences. The starter motor aperture is designed for the pre-engaged type of motor so the top starter bolt has



to be reversed and placed through the plate then the motor before securing the whole lot with a nut and lockwasher.

## CABLE CONNECTIONS

**Selector:** after removing the selector cable from the back of the old gearbox, push the cable fully forward and expose the small wire clip. Ease

open the clip and remove the small metal shaft. Push the end of the cable straight onto the selector housing of the new gearbox.

**Kickdown:** remove the old cable and replace with the new cable on the box. Beware, the new box may be full of oil — mine was!

**Park cable:** do with it as you please. It makes a great curtain rail. The new gearbox only requires the selector cable as park is now selected at the valve block assembly.

## **DRIVESHAFTS**

Remove old drive shaft oil seals and then the metal casings from old differential and fit new oil seals. Then bolt your old diff casings onto the new gearbox.

## **STABILISER BAR**

OK, now here's the bad part. There is no mounting for the bottom rear stabiliser bar to attach to. There are various ways around this. Grind the old mount from the old box and weld it to the new one. Or, as I prefer, design a new mounting to hold the engine steady.

## **GOOD TIP**

Place the car high on stands at front and remove front wheels. Remove battery. Remove front O/S crossmember and the mounting to the chassis. Now undo the drive couplings and hubs and swing the drive shafts and universal joints out of the way.

Place a jack under the gearbox with a wooden block between jack saddle and box then remove starter and disconnect gearbox cables and wires. Remove the four bolts around the drive plate and the exhaust bracket to the gearbox.

Now take out all the bolts surrounding the box which hold it to the crankcase, including the two "fun ones" between the torque convertor housing and gearbox body (9/16 in.

slim long-reach socket will do) then finally lower the gearbox down.

Take care to ease the convertor past the crankshaft recess. It's a tight squeeze but it will go. Also watch for the wiring loom beside the torque convertor housing as the gearbox is lowered. This eliminates the need to lift or remove the engine. The alternative, as we all know, is to remove the entire power unit!

Fitting is the reverse of above (obviously carrying out the mods mentioned earlier). Take the opportunity to fit a new oil pump and obviously fit a new oil O-ring and gaskets to the new box.

With it all back in place you need to wire the inhibitor switches. These are in the valve block and a new loom is supplied with the gearbox. So all you have to do is connect this loom to the wires that go to the old inhibitor switches inside the dash. Then use a multi-meter to find neutral on the gearbox, select N on the dash and adjust the gearchange cable to suit. On the new gearbox there is actually a selection past L but on my 18/85 I cannot select this. I may be able to do so with a 2200 selector assembly.

For the engine steady I made a cradle of 25x25mm angle and purchased two large rubber mountings. Then after a bit of drilling and grinding I unbolted the four 9/16 in. bolts at the front of the gearbox, offered up my contraption and replaced the bolts.

Right, there you have it. If anyone is interested in doing this conversion my number is 01424 437027 and I would be happy to offer advice.

After driving the hybrid car around for 2 weeks now, the differences are the 1-2 and 2-3 shift are at a slightly higher rpm than on the old box but on hills this is actually an advantage for the old girl. I don't know how long these autoboxes will be available so get one now!

Finally I must thank the following — John Watson and Joe Barling for help and advice, Tony Wood for spares, and the Club that makes all this possible. Remember, you only get out what you put in.

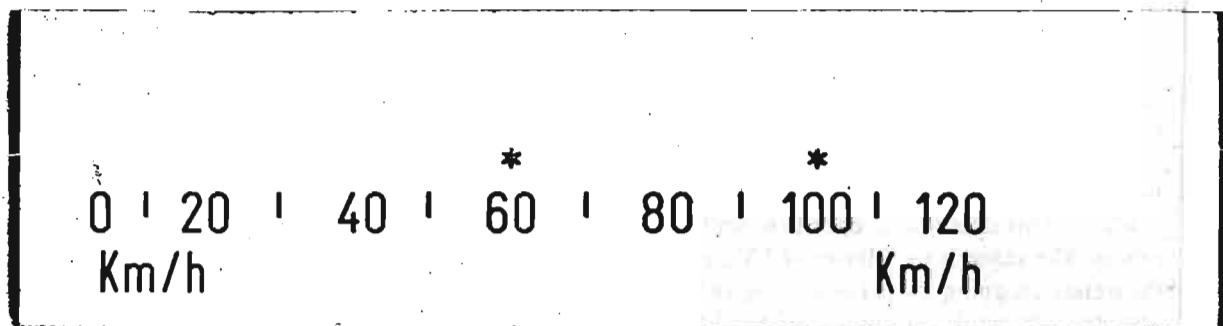
**Danny Robertson (0939)**

## NEW LANDCRAB ACCESSORY!

### MPH/km/h Indicator.

Simply snaps into speedo front  
Manufactured from clear acrylic sheet 2mm  
thick. Reversed engraved lettering in yellow.  
Easy to read, doesn't obstruct other functions.  
To Calibrate: simply line up 100 km/h asterisk with 60 mph.

Shown actual size



COST \$ 20-00 + \$ 2-70 Packing and handling.

Contact ↴

FROM
<b>COLJAN Engravers</b>
Servicing All Industries
<i>With Compliments</i>
85 Victory Street, Keilor Park 3042. Victoria Telephone 9331-6969 Fax; 9331-5699

All states

K.P. 7/97.



**AUSTINS OVER AUSTRALIA  
EASTER "99"**  
**Friday April 2 to Monday April 5 1999**  
**ADELAIDE, SOUTH AUSTRALIA**



The AUSTIN 7 CLUB of S.A. extends a warm welcome to you to attend the 5th Austins over Australia event to be held during Easter 1999 in Adelaide. There was overwhelming enthusiasm & support of entrants at the Austins Over Australia rally in Toowoomba & the 75th Austin 7 birthday rally in Maroochydore in April this year expressing interest in coming to Adelaide in 1999. It is an honour for our club to host this event.

We look forward to sharing our city with you & joining in the fun & friendship that Austins Over Australia in "99" will bring. We want you to know that planning is well underway for the event, our priority has been to select the rally headquarters location & secure accommodation for rally entrants on one of the busiest weekends of the year. Generally a lot of people on holiday re-book accommodation each Easter at places they enjoy, which makes it difficult to secure accommodation for an event of the magnitude of Austins Over Australia.

In saying that, we are most fortunate to be offered sole use of possibly the best holiday village in Adelaide. This offer is only open to us until end of Nov '97 & dependent upon our ability to fill all cabins. The venue is the Marineland Village at West Beach which is on the sea front, 6 minutes from the trendy shopping district of Glenelg (which has a great selection of restaurants & beach side activities) & less than 15 minutes from the centre of Adelaide. We have selected this village as the hub of Austins Over Australia "99". The Quarterdeck Leisure Centre which is placed centrally within the village will be for both the convenience of rally entrants as well as the rally headquarters.

The village accommodation is an exceptional venue. It consists of 30 two bedroom villas, 32 two bedroom holiday units, 8 one bedroom cabins & 24 Cabin vans. All accommodation has private bathrooms & kitchen facilities as described in the enclosed brochure with tariff costs. We expect the costs may increase by no more than \$2/night by 1999. Over Easter, they will only accept bookings for a minimum of 3 nights, Friday, Saturday & Sunday nights. Additional nights could be available providing we have prior notice.

Vehicle parking is directly adjacent to the accommodation units with excellent security for your car & there is adequate parking for trailers should you need it.

The Austins Over Australia committee will be responsible for your bookings, handling of all money & issuing keys to the rally entrants upon their arrival for those staying at the Marineland Holiday Village.

At this stage there is adequate alternative accommodation in the popular West Beach Caravan Park & the motels in the Glenelg area should you prefer to stay there, or if the Village cannot accommodate the number of rally entrants. Bookings for these venues will not be handled by the committee, you will need to do this yourself. A guide to these alternative accommodation venues will be advised in the next news letter. Initial inquiries suggest that motel room tariffs range between \$80 & \$150 per couple per night depending on the quality of the accommodation.

It is envisaged the "99" rally will have 4 runs over this Easter week end;

- A short orientation tour of Adelaide, including historic Port Adelaide and the local beaches on Friday,
- The Barossa Valley, including visits to a Winery (or more than 1 if you wish) on Saturday,
- Through the Adelaide hills calling in at such places as the historic township of Hahndorf & the National Motor Museum at Birdwood on Sunday,
- A tour of the south coast beaches including Victor Harbour & Goolwa with the opportunity of having lunch & a trip on either the Mundoo paddle steamer or the steam driven "Cockle Train" on Monday.

We expect that entrants will have the option to attend a Welcoming dinner on the Friday night & dinner dance on the Sunday night. Lunches will be catered for during the week end.

To assist us in planning Austins Over Australia "99", if at this stage you are considering attending our rally we need to know. Also if you would like to avail yourself of the accommodation at the Marineland Holiday Village would you kindly complete the enclosed questionnaire & return it to the indicated address as soon as possible. If you intend sharing accommodation at the Village with another family of rally entrants, each family is requested to complete a questionnaire. Your response to this questionnaire is only an expression of interest at this stage, financial commitment will not be needed until 1998. Once we have all of your responses we will be able to determine if we can take up the offer of having sole occupancy of the Marineland Holiday Village over Easter "99", therefore your assistance in this matter would be really appreciated.

We have set up a "web site" should you have access to the internet. The address is <http://white.bio.flinders.edu.au/austin7>. This site will be updated regularly. If you do not have access to this type of modern technology, do not despair, we will update you with regular newsletters.

Please feel free to contact any of the rally committee by either phone or by mailing to the following address:

Austins Over Australia "99"  
41 Liascos Avenue  
Newton S.A. 5074

This letter has been circulated to all previous rally entrants & known Austin clubs. If you know of someone who may not have been on our circulation list who you think may wish to attend this rally, please pass on one of the enclosed questionnaires.

We look forward to your reply,  
Your Austins Over Australia "99" Committee

Dave Hall (Rally Director)	(08) 8337 7045
Ralph Drage	(08) 8251 2637
Ian Jones	(08) 8447 5861
Geoff Carroll	(08) 8270 3841

Editors note; We have booked at West Beach Caravan Park. It is right on the beach which is perfect for the early morning joggers and swimmers.

The following articles are 3 different ways to run unleaded in our vehicles, should the Government 'pull the plug' on super. **Albert English** has done 15,000 miles in his beautifully restored mk 1 1800 using unleaded with the help of a Broquet. He is using a fuel star on another 1800 and thinks the Broquet is better.





## PROTECTING ALL ENGINES AND THE ENVIRONMENT

**GREENPOWER** is a unique fuel enhancement system which increases an engine's efficiency by:  
improving combustion  
continuously lubricating the combustion area.

**FROM THESE TWO ENHANCEMENTS IMPORTANT BENEFITS FLOW:**

### **THE PRINCIPAL BENEFITS OF GREENPOWER.**

1. Any petrol engine can run on unleaded petrol - and most will be able to run on 91 octane
2. Harmful exhaust emissions are reduced by 30% to 60%
3. Increases engine power
4. Lowers fuel consumption
5. Removes existing carbon deposits from combustion area

### **HOW GREENPOWER OPERATES AND ACHIEVES THESE BENEFITS**

**GREENPOWER** is suitable for any petrol, diesel, or L. P. G. fuelled engine.

The **GREENPOWER** unit is simply fitted in the fuel line, close to the carburettor or injection system.

**GREENPOWER** contains a series of alloy cones, and a ferrite core, thereby combining two well established scientific processes - electrochemical and electromagnetic.

The Alloy Cones react with mild steel and the hydrocarbon fuel, releasing molecular tin into the fuel. The tin provides high quality lubrication through out the combustion area and upper cylinder covering : carburettor/ injectors and needles, valves and seatings, pistons and cylinders. The tin embeds itself into the pores of these metallic surfaces.

The lubricant effect of lead is replaced by the presence of the tin molecules. Tin is a more efficient lubricant than lead by some 500 times. The effect of this is that now any engine can be run on unleaded fuel with NO adjustments to timing, or having to add costly lead substitute additives.

This technology was developed as an octane booster for fighter aircraft during World War II, so it's merits have been known for some decades. With the World-wide move away from leaded fuel to unleaded this technology has come into it's own, enabling hundreds of thousands of engines to be converted.

The Ferrite Core electro-magnetically ionizes the hydrocarbon molecules reversing their charge to positive. This enables an efficient bonding with the negatively charged oxygen, thereby promoting greatly improved combustion which means a more complete fuel burn. It has a further benefit, in that the negatively charged carbon deposits are gradually absorbed and then eliminated through the combustion process, giving and maintaining a clean combustion area. The absence of carbon gives a better heat transfer, which with the top cylinder being lubricated by the tin, means lower engine temperatures. The pistons, rings and valves remain clean and are lubricated ensuring optimum compression.

### **EXPECTED LIFE OF THE GREENPOWER UNIT.**

**GREENPOWER** is a "fit and forget" system, requiring no maintenance. The unit should be replaced after 250,000 km, at which time the authorized fitter will arrange for it's safe disposal. Should the vehicle be scrapped before the km limit, it may be refitted to another vehicle. The warranty will not be effected provided:

Satisfactory evidence of number of km installed for is provided.

The transfer is undertaken by an authorized fitter.

# THE SOLUTION

## GREENPOWER'S EFFECT ON VEHICLE EMISSIONS

**GREENPOWER** improves combustion and this reduces the pollutant unburnt fuel and other gases emerging from the exhaust system.

*Extensive dynamometer and static emission analysis have given the following:*

- Hydrocarbons (HC):** This is unburnt or partially burnt fuel, and is highly toxic. The more efficient air/fuel mix giving improved combustion with **GREENPOWER** reduces HC by approximately 30% to 60%.
- Carbon Monoxide (CO):** Produced as a direct result of poor combustion, and is highly toxic. **GREENPOWER** reduces CO levels by 30% to 50%.
- Oxides of Nitrogen (NO<sup>2</sup>):** Are directly related to the operating temperature of the engine, and are highly toxic. As **GREENPOWER** lowers engine temperatures levels of NO<sup>2</sup> are reduced.
- Carbon Dioxide (CO<sup>2</sup>):** Are a product of combustion; thus levels rise as efficiency improves. This gas increases as **GREENPOWER** creates more efficient combustion. CO<sup>2</sup> is far less harmful than other combustion gases.
- Oxygen (O<sup>2</sup>):** An essential ingredient of the combustion process. O<sup>2</sup> levels rise with **GREENPOWER**.

The transition from leaded petrol to unleaded has prompted concern over the levels of benzene emissions from ULP. **GREENPOWER** significantly reduces benzene emissions by approximately 50%.

**GREENPOWER** may be augmented with a catalytic converter. Tests show that the two systems combine to virtually eliminate toxic emissions and the life of the converter is considerably extended.

As **GREENPOWER** uses tin molecules for lubrication, the question arises as to the likelihood of tin emissions being produced. Tests have shown that no level of tin emissions is detectable.

**GREENPOWER'S** effect on diesel emissions shows a drastic reduction in particulate levels, turning the black smoke emitted by diesel engines under load to grey/white. With the assistance of in-tank units **GREENPOWER** inhibits gelling in very cold weather, and prevents the formation of bacterial growth (diesel bug) in the fuel tank.

## GREENPOWER PRODUCES MORE POWER AND POTENTIAL FUEL SAVINGS.

**GREENPOWER** ensures a higher percentage of fuel is burnt and also assists with lubricating the upper cylinder. This gives an increase in available power and fuel saving of around 4% to 8%. Should the driver choose to utilize all the additional available power then the fuel saving will be marginal. Unfortunately the motorist cannot have 100% of both additional power and fuel saving.

## FUEL INJECTED ENGINES.

### 1 THOSE ALREADY USING ULP.

In New Zealand, it has been customary for the Motor Trade to disconnect the oxygen sensor. When **GREENPOWER** is fitted these engines have lower emissions but NO power or fuel saving. However, when the oxygen sensor is reconnected the power improvement/fuel saving occurs, but the emissions return to manufacturer's pre set levels as the engine's computer management system functions correctly.

### 2. THOSE USING LEADED PETROL AND CONVERTING TO ULP

After **GREENPOWER** is fitted the normal conversion procedure is followed. Any time after converting the oxygen sensor may be reconnected and the above power and fuel benefits will occur.

It should be noted that additional fuel savings are possible when the vehicle's computer management system is fully functional.

# TO POLLUTION

Division of **FUEL DYNAMICS PTY. LTD.**

P.O. BOX 1169 MAROOCHYDORE QLD. 4558

(074) 44 7845 MOBILE 018 44 3391

Dear Reader

Thank you for your enquiry regarding the Broquet Fuel catalyst, we have pleasure in enclosing as requested further details of the catalyst together with a price list and order form.

As you will have read, the history of the product and in fact the scientific data going back as far as 1922 indicate that the use of a tin based alloy as a fuel enhancer is very well documented and in fact at the high temperatures experienced in the combustion can be proved to be a better additive than tetryl ethyl lead, in fact it would appear from reading the technical papers of the period, that lead was adopted only because at that time it was most cost effective.

The Catalyst is now extensively used throughout Europe, in the U.K it has been widely accepted by government and local government and service agencies as being the most economical way of converting their older vehicles to run on unleaded petrol and at the same time, considerably reduce the emissions of other exhaust gases, this effect is produced in two ways, firstly by promoting more efficient combustion, thereby utilising more of the available fuel and releasing additional energy for motive power, and secondly by removing the waxes and gums that build up due to incomplete combustions, it is these contaminants together with the build up of carbon within the combustion chamber that result in heat retention and eventually damage to valve seats and stems.

It has been proved that Broquet is wholly beneficial to the well being of an engine and the use of the catalyst will result in a cleaner more efficient running engine, with the benefits of fuel savings and emission reductions. In addition the catalyst will replace the lubrication for valves and pistons which it is assumed is supplied by an oxide of lead.

We hope that you will find the catalyst of interest as it is indeed, a simple and effective way of "converting" the older vehicle to run on unleaded fuel with little to no adjustment as has been proved by 300,000 users in 17 countries world wide.

Yours sincerely

  
Roger W. Bull

## **GREENPOWER IS AN INVESTMENT, NOT AN EXPENSE.**

**GREENPOWER** is a once only investment in a long lasting environmentally benefiting product, giving a financial saving that pays for itself many times over if the motorist utilizes the fuel savings.

### **Primary financial benefits are:**

- the 4% to 8% fuel saving
- lower pump prices on converting to unleaded
- most vehicles will be able to run on the lower 91 octane ULP
- not having to use lead substitute additives (at a cost of approximately \$2. 00 per 40 Litres. )

The average motorist converting to 91 ULP and driving 20,000 km per year and achieving a 5% saving will recover the cost of the unit in six to eight months.

### **Secondary benefits are:**

The long term effects on the engine from top cylinder lubrication and being 'carbon-free', resulting in lower maintenance costs.

### **WHICH FUEL?**

With **GREENPOWER** fitted, most engines will be able use 91 octane ULP, with no loss of performance or pre-ignition ("knocking" or "pinking") The alloy cones also contain antimony, a widely used pre-ignition inhibitor and octane booster.

Exceptions: high compression and high performance engines. For most of these the manufacturers specify 98 octane fuel. These include; Jaguar, Rover, Rolls Royce and Bentley.

As the quality of fuel varies from time to time any engine prone to pre-ignition should use the new 96 octane ULP.

### **WARRANTY & GUARANTEE.**

A Warranty is given against manufacturing defects. Strict manufacturing controls are in place with alloy mixes controlled and analyzed by an independent laboratory, and every unit is pressure tested. To comply with the Warranty the unit must be installed by an Authorized Fitter, and when converting to ULP the running-in instructions must be followed. A copy of the Warranty is available for inspection from your local Stockist/Authorized Fitter or Powerplus New Zealand. Ltd. **GREENPOWER** comes with a three month money-back guarantee.

\*\*\* \*\*

### **SUMMARY OF BENEFITS**

- |                                    |                               |
|------------------------------------|-------------------------------|
| * Convert any engine to U.L.P.     | * Cleaner engine              |
| * Reduce emissions                 | * Cost Effective              |
| * More power                       | * Easily fitted to any engine |
| * Save fuel                        | * No maintenance              |
| * Works for Petrol, Diesel, L.P.G. | * Long lasting                |

\*\*\* \*\*

#### **AREA AGENT:**

*M. Gooding*

*02. 9498. 4224*

#### **AUTHORISED FITTING AGENT:**

*distributed by: Powerplus New Zealand Ltd - PO Box 11-525, Ellerslie, Auckland.*

**Fuel saving.** Fuelstar makes no claims as to the extent of fuel savings because much depends on the age and condition of the vehicle and the manner in which it is driven. However, the majority of users of Fuelstar report fuel savings in the order of 15%.

**Benzene.** It is generally accepted that unleaded petrol contains higher amounts of potentially carcinogenic compounds of benzene, toluene and xylene (BTX) than leaded petrol. There have been some fears that using unleaded petrol in cars designed for leaded petrol (and hence without a catalytic converter), may result in an increase in those compounds from the exhaust. Scientific tests show that the Fuelstar fuel conditioner, when using unleaded petrol, reduces these emissions substantially.

**Fuelstar canister life.** Fuelstar canisters have a life expectancy of at least 1.5million kms and require no maintenance or topping up. They may be swapped from vehicle to vehicle. A larger unit than recommended for any given application will have no harmful effect. With Fuelstar, no other additives are required.

#### **Fuelstar Petrol Catalyst Model Selection guide and price list.**

<b>Model</b>	<b>Engine Size</b> (Carburetted or injected)	<b>Rec. Retail Price</b> (includes sales tax)
TM4	Chain saws, mowers & similar, to 10 litres tank size	\$25
TM8	Ride on mowers, gensets, mopeds, fuel tanks 10 to 100 litres	\$35
PX4	Go-karts, motor cycles, larger outboards etc to 850cc	\$169
PX6	Motor cycles to 1500cc & small cars to 1200cc	\$199
PS112	Cars & light commercials up to 2.0 litres (125ci)	\$249
PS116	Cars & light commercials 2.1 to 3.5 litres (220ci)	\$369
PS120	Cars & light commercials 3.6 to 7.5 litres (460ci)	\$469
	(Note: Turbocharged engines may require unit one size larger than normal. Please enquire)	
PS140	Highly modified performance engines	\$775

**Note:** All units (except Tank Mates) are supplied with interchangeable barbed ends, unless otherwise requested, each kit comes with 8mm (5/16") end fittings.

**Fitment.** Fuelstar canisters are plumbed into the fuel supply line similar to a fuel filter. Mounting brackets are provided to secure the unit. They may be placed into the fuel line at any convenient place. It is preferable to mount the unit between the fuel filter and the carburettor or injectors. Detailed fitting instructions are supplied with the product.

**Warranty and guarantee.** Fuelstar canisters are warranted free from defect for 5 years and carry a 90 day no questions asked money back guarantee. Where fitted to a petrol engine designed for leaded petrol, to enable that engine to run on unleaded petrol, and valve seat recession, results, the company will make good the damages at its expense. This undertaking shall extend to a period of 5 years from date of purchase and is conditional upon the product being properly fitted in accordance with the company's fitting instructions.

**For further information, contact your local dealer or Fuelstar Australia Pty Ltd**



**Fuelstar Australia Pty Ltd**  
Unit 1, 33 Brendan Drive, Nerang Qld 4211  
PO Box 2678 Nerang Qld 4211  
TEL (07) 5596 6544 FAX (07) 5596 6577

The fuel catalyst is normally inserted into the fuel tank, or fuel line of a petrol, diesel or LPG engine (all Broquet units comply to AS1425-1989 SAA Automotive LP Gas Code Section 2.2.2. and are approved for use in passenger vehicles by A.G.A. certificate No. 5054) and will remain active for up to 400,000 Kms in a car. The catalyst works in two ways, firstly by promoting more efficient combustion, thereby utilising more of the available fuel and releasing additional energy for motive power. Secondly by removing and then inhibiting the formation of carbon deposits, waxes and gums that inevitably build up, due to incomplete combustion. The combined effect is to produce a cleaner more efficient engine resulting in substantial savings in fuel and oil, less maintenance and most importantly a significant reduction in exhaust emissions.

For car owners today another significant advantage of using the catalyst, in both financial and environmental terms, is that it will allow all petrol-engine vehicles that are correctly tuned for leaded petrol to run safely, efficiently and economically on unleaded petrol with little, to no, adjustment.

## Benefits

The BROQUET FUEL CATALYST will start to improve the fuel as soon as it is applied. However the full benefits can take approx. 4000 Kms or 80 hours to be realised, depending upon the condition of the engine at the time of treatment. Better results may be achieved if the fuel to air ratio is progressively leaned off as more Kms are covered, this is most apparent when used with LPG on older vehicles with open loop systems, modern closed loop EFI systems will automatically adjust the fuel ratio.

Initially the benefits will include:-

- ★ REDUCED FUEL CONSUMPTION
- ★ REDUCED OIL CONSUMPTION
- ★ QUIETER RUNNING
- ★ THE USE OF UNLEADED PETROL IN ALL PETROL VEHICLES.
- ★ CAN BE SAFELY AND EFFECTIVELY USED WITH CATALYTIC CONVERTERS
- ★ REDUCED EXHAUST EMISSIONS
- ★ CLEANER LUBRICATING OIL
- ★ SMOOTHER ACCELERATION

In the long term there will be additional advantages of:-

REDUCED MAINTENANCE

LONGER ENGINE LIFE

## Research Development and Testing

It is the policy of this company to pursue a vigorous and on-going programme of research, development and testing (both in-house and independent) to ensure that the catalyst consistently meets the quality essential for this type of product and is suitable for its many applications.

It is for this reason that care should be taken to ensure that the units purchased are original and not copies and that units should only be purchased from authorised distributors and stockists.

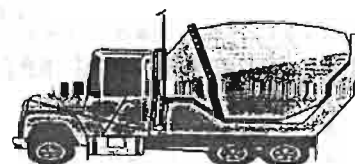
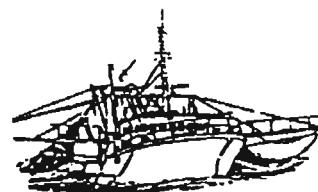
## Fitting

The BROQUET FUEL CATALYST can be fitted into the fuel tank or fuel line of any petrol or diesel engine by any competent person, however in the case of LPG it must be fitted by a licensed fitter. The exact method is determined by cost-effectiveness or customer preference, your local Broquet stockist will be pleased to advise you.

To ensure that you obtain the full benefits from the catalyst, and thus the engine, we strongly recommend that whatever the application of your engine, it should be correctly and professionally serviced prior to fitting the catalyst.

## The Broquet Assurance

We hereby state that the BROQUET FUEL CATALYST cannot in anyway prove harmful to an engine. In addition we confirm that it is comprehensively underwritten by a major insurance company. The worldwide insurance covers all damage to an engine proved to have been caused by the proper use of the fuel catalyst. In addition, if the customer is not completely satisfied with the product or its claims after 4500 Kms or within 90 days of use a full refund of the purchase price will be made upon return of the unit.



Your BROQUET Distributor/Stockist

Australian Distributor  
Fuel Dynamics Pty. Ltd. P.O. Box 1169 Maroochydore Qld. 4558  
Tel: (02) 867 3988 Fax: (02) 867 3991

COPELAND Paul	1 /507 - 511 Kingsway Miranda N.S.W. 2228	[02] 9524 7965	Mk 11 1800
COPELAND Terence	11 Windsor Street Margate QLD 4019	silent	Mk 11 1800 x2
DAVEY Michael	MC 6123 South Coast Mail Centre Wollongong NSW 2521	(042)265 110 B/H [042] 273 444	Ute
DAY Colin	"Cooranga" RSD 233 Cohuna Vic 3568	(03) 5456 8227	Mk 1 1800
DOUGLAS Keith	50-66 Mackelroy Plenty Vic 3090	(03) 9432 2820 B/h 9478 3219	MkII Auto. MkII Man.
DREW Mathew	16 Schrubby Walk Croydon Vic 3136	silent	Mk 1
DUFFIN Jim	56 Ruhamah Avenue North Geelong Vic 3215	[03] 527 88373	Mk 1, Mk 11 Nomad
EALEY David	19 Hendersonhill Rd Silvan Vic 3795	(03) 9737 9235	MkII Ute Man.
ELINGTON Meg	R.M.B. 1146 Chiltern Valley Rd Rutherglen Vic 3685	[060] 328 303	2 x Mk 1 Man 2 x Mk 11 Man
ELSOL John	28 Dema St Sunnybank QLD 4109	(07)3344 1989	Mk 11 1800
ENGLISH Albert	M/S 299 Quarry Rd Bunderberg Qld 4670	(071) 578 191	MkI Sedan MkII Sedan
FARRELL Pat	4 Wayne Ave Boronia Vic 3155	(03) 9762 4457 015 326 606	2 x MkII 1800s Morris 1800 Mk 11 ute
FIENBERG Greg	IronBark Valley Putty NSW 2330	(065) 797 075	Mk 1 & Mk 11 Kim
FLOREY Donald	419 Windermere S Ballarat Vic 33503 Litre	(053) 311 051	MkII Tasman Man/
GEARY Richard	Box 1786 Tamworth NSW 2340	(067) 662 399	MkI MkI Ute
GODALL Robert	95 Osborne Ave Mt Waverley Vic 3149	[03] 9543 7861	2 Mk 11 Kims
GREASLEY Paul	18 Palmerston St Kalgoorlie WA 6340	(090) 911 208	MkII Man. MkI
GRIFFITHS John	93 Wills Street Kew Vic 3101	(03) 9853 8251	Mk 1 1800
GUINEA Kerry	Box 45 Wulguru QLD 4811	(077)783 379	Mk 1 1800
HALLORAN Graham	56 Farquhar Street Wingham N.S.W. 2429	[02] 6553 0164	Mk 11 1800 Mk 1 Kimberley
HOGG Allan	22 Huntingdale Ave Miranda NSW 2228	(02) 9522 8184	MkI Kimberley A 30, A 90, A 95
HOLMES Geoffrey	14 Brukner Close Cowrie ACT 2904	(06) 291 7196	MkI Sedan
HOPKINS Rick	PO Box 51 Taralga NSW 2580	(048) 402 309	3 Mk 1s [1 ute] 2 Mk 11 s
HOPPER David	8 Evergreen Street Toowoomba QLD 4350	[076] 33 3383	Mk 1 1800 {Restored}
HUCK David	Leyland Park RMB 8A March Rd Orange NSW 2800	(063) 658 328	Mk 1 1800 Mk 11 1800[restored]
HULLEY George	46 McMillan Rd Narooma NSW 2546	(044) 762 144	MkII Ute



# WHO'S WHO

AS AT 30 / 8 / 97

A.M.V.C. of Q.L.D.	1376 Old Cleveland Road (07) 3399 1152 Carindale Q.L.D. 4152		
A.M.V.C. of N.S.W.	Box 3943 Parramatta (02) 9651 2394 N.S.W. 2124		
A.M.V.C. of W.A.	Box 1543 Wangara (09) 343 2739 W.A. 6065		
ALLEN Peter	6 A Lambeth Place [03] 9534 7726 St Kilda Vic 3182	Mk 1 1800	
ALYARI Robert	4 Agathea Court [03] 9785 2728 Frankston North Vic 3200	Mk 11 1800 Mk 1 1800	
ANDERSON Graeme	3 Buffalo Rd (02) 9816 3389 Gladesville NSW 2111	Kimberley	
BAIRD Mary	34 Culzean Crescent [03] 524 38154 Highton Vic 3216	Mk 11 1800	
BARLING Joe	125 The Ridgeway Ching (081) 529 608 London E4 6QU U.K	Wolseley 6x3 Wolseley 18/85 Mkl	
BERRY Walter	12 Elkin Ave, (02) 4987 1680 Raymond Terrace NSW 2324	Mk 1 & Mk 11 Austin 1800 mk I	
BLAND John	25 Keats Street [02] 9871 5674 Carlingford N.S.W. 2118	Mk 11 Tasman	
BOURDAIREu	436 Maitland Bar Rd (063) 733 633 Mudgee NSW 2850	MkII	
BOWEN John	20 Granville Street (07) 3352 5694 Wilston QLD 4051	2 x Kimberleys	
BRENDLE Clifford	133 Old Para Court [03] 9434 2226 Montmorency Vic 3094	Mk 11 1800	
BRIGHT Douglas	26 Boynton Street [03] 622 92665 Kingston Tas. 7050	Mk 11 1800	
BROADMEAD Kim	M/ S 902 [076] 638 142 Dalby QLD 4405	Mk 11 1800	
BRYANT Glen	18 Lochbuy St (06) 251 7813 McQuarie ACT 2614	Tasman Mk 1	
BULL Cameron	21 Marcus Road, (03) 9551 1880 Dinglley Vic. 3172	Mk 11 1800	
BURFOOT Jim	School house Road (03) 5964 7356 Woori Yallock Vic 3139	SWB Gipsy LWB Gipsy Morris Gomad Mk 1 & 11 1800	
CAMERON Laurie	913 Riversdale Road [03] 9836 6406 Surrey Hills 3127		
CAMERON Neil	Box 64 [08] 984 48358 Albany W.A. 6381	Mk 11 1800	
CARDEN Geoff	36 Constitution Rd (073) 857 2485 Windsor Qld 4030	Mk II 1800 Man. Mk 1 1800 man	
CHARMAN James	40 William Street [03] 9466 4776 Lalor Vic 3075	Mk 11 1800	
CHAMPLIN Gabe	121 Cressy Road [02] 9887 2881 East Ryde NSW 2113	Ute	
CODD Peter	Box 2351 Nerang East [07] 5545 2204 Q.L.D. 4211	Mkl 1966 MkII 1970	
COOPER Geoffrey	10 Tonks Street [07] 3277 2717 Moorooka QLD 4105	Mk 11 1800	

MELEY Eric	1 Kylie Street Urunga N.S.W. 2455	(02) 6655 6578	Mk 1 Kim
PAGE Peter	126 Monbulk Road Emerald Vic 3782	[03] 596 84767	Mk 1 1800
PARER Terry	P.O. Box 5 St. George QLD 4487	(076) 25 3371	Mk 11 1800
PARKER Geoffrey	Box 727 Mittagong NSW 2575	(048) 682 114	Mk 11 1800
PATIENCE Ken	149 Brees Rd East Keilor Vic 3033	(03) 9337 4661	2xMkII Sedans Westminster A99 Skateboard
PECK Norm	127 Ellam Drive Seven Hills NSW 2147	(02) 9622 0791	2xMkIs
PEDERSON Hans	High Performance Products 3 Thornton Cres, Mitcham Vic 3132	(03) 9874 1800	Mk 11
PEDERSON Herman	14 Vernon St Blackburn Sth Vic 3130	Should have	Mk I S
PETERS Robert	32 Price St Torquay Vic 3288	[03] 52 612 326	MkI 1800
PHILLIPS Colin	99 Lurline St Katoomba NSW 2580		MkI 1800 Man.
POAD Doug	3/396 Nepean Hwy Frankston Vic 3199	(03) 9781 1226	MkIII Aus.2200 Man.
POWELL Ian	7 Acacia St Elsternwick Vic 3185	(03)9 523 7097	2xMkII Man.
PRINS Colin	9/11 Digby Crt Springvale Sth Vic 3172	(03) 9 548 3374	Mk 1 1800
ROBSON John	2 D Wayne Ave Sandy Bay Tas 7005	[03] 62 254 250	Ute
ROBERTSON Brian	32 Robert St Telopea NSW 2117	(02) 9873 1555 015 311 388	Looking
RUDMAN David	85 Valparaiso Ave Toongabbie NSW 2146	(02) 9631 4854	MkII Ute Restored MkIIMan. MkITasman
SMALLCOMBE Franklin	30 Illawarra Dve Kin kora Gladstone Qld 4680	(079) 781 527	2 Utes
SNEDDEN Richard	36 Claremont Ave Malvern Vic 3144	(03) 9509 9110	2 Wolseley 6's
SOLOMON Neil	Box 44 Bendigo Central, Vic 3552	(03) 5447 0626	Mk I
STAPLETON Dick	11 Cooba Court Shailer Park 4128 QLD		Mk 1 1800
STEPHENS Daryl	22 Davison Street Mitcham Vic 3132	(03) 9873 3038	2xMkI
STRELNIKOV Basil	256 Walsh Street Mareeba Qld 4880	(070) 921 535	MkI MkII
SWILE Rodney	35 Dehlia Street Marsden QLD 4132	320) 062 221	Mk 11
TADMAN Peter	PO Box 524 Nundah Qld 4012	(07) 3266 4537	Mk II Mk I Ute..
VERKROOST Chris	26 Kensington Road Summer Hill NSW 2130	[02] 9799 9204	Mk 11 Kim.
VINCENT Andrew	44 Heathcliff Cres Balgowlah Heights NSW 2093	[02] 9948 8123	Mk 11 1800

HUSSEY Neil	18 Channel St Mornington Vic 3931	(059) 755 857	MkII Kimberley
JONES Peter	4 Yarandin Court Worongary Qld 4213	silent	MkII
KENDRICK John	Unit 1/ 62 Glastonbury Dve Highton Vic 3216	(053) 413 616	Mk 11 1800
KENNON Tim	12 Nirissa Gve Oak Park Vic 3046	(03) 9304 1021	Rally Car SMO 225G
KINDLEYSIDES Lyle	137 Riverside Drive Port MacQuarie NSW 2444	(065) 836 131	Mk 11 Mk 1
LEDDEEN Quin	Box 135 Annandale NSW 2038	(02) 9660 3672	Mk 11 1800
LEE Shannon	3 Deanswood Road Forest Hill Vic 3131	[03] 9878 3679	Mk 11 1800
LEIGHTON Adrian	20 Clarinda Avenue Faulconbridge NSW 2776	[047] 5169 26	Mk 1800 Mk11 1800
LENNY Ed	51 Prince St Goulbourn NSW 2580	(048) 212 015	MkI Auto.
LESLIE Robert	6 Celia St Glen Iris Vic 3166	(03) 9889 2418	MkI
LEWIS Chris	18 Lucas Street Caulfield South Vic 3162	(03) 9596 5730	Mk 11
LOCKE Richard	31 Sunways Ave 7 Mile Beach Tas 7170	(03) 62 486 765	Looking for the right one ! Princess 1800
LYLE Ken	3/11 Foundry St Mayland Perth WA 6051	(09) 271 3737	MkI Sedan MkII Ute MkII Sedan MkII 1800 Sedan MkII Ute under resto
LYNCH Raymond	10 Cecelia Drive East Keilor Vic 3870	(03) 331 3870	Mk 1 1800
MANNING Clifford	39 Alawoona Avenue Mitchell Park S.A. 5043	[08] 8277 0465	1800 Ute A70 Ute
MARSHALL Geoff	19 Anne St Blackburn Nth Vic 3130	(03) 9877 1425	Mk 1 & MK 11
McMASTER Geoff & Elaine	6 Mereworth Way Marangaroo WA 6064	(09) 343 2739	
McINERNEY Barry	1 Reserve Street Neutral Bay N.S.W. 2089		
McINTYRE Ian	76 Moffatts Drive Dundas NSW 2117	[02] 9871 2521	2 x 1800 Mk 11s
McPHAIL Stephen	19 Joan Street Chester Hill NSW 2162	(02) 9645 2190	Mk 11 1800
MEDLEN Robert	2 Grassdale Rise Woodlea Estate Aberfoyle Park SA 5159	(08) 370 7794	MkI 1800
MELVILLE Neil	C/- Cowaramup PO WA 6284	(097) 555 332	2xMkI Sedans 2xMkII Utes
MITCHELL Bill (Morris 1100 Registrar)	Box 128 Beauford 3373 Vic.	(053) 492 720	Many 1100 s
NICHOLS Paul	47 Moores Rd Monbulk Vic 3793	(03) 9752 1489	MkI Rally Car
NICHOLSON Lee	9 Hobart Street Bentleigh Vic 3204	[03] 9557 6172	Mk 11 1800
NOLAN John	217 Badger Creek Road Badger Creek Vic 3777	[03] 5962 3435	2 x Wolsley 18/ 85 s

# MAILBAG



Bill Wheeler  
R.M.B. 123 Wickerslack Lane  
Queanbeyan  
N.S.W. 2620

06 297 4936

Please advertise my Austin 1800 mk 1 for sale in the next Landcrab journal. This is a reluctant sale, but the car gets so little use these days and as our Subaru wagon is more suited to our lifestyle it seems sensible to part with it. My wife no longer drives, so we do not need two cars. We bought the car in England, used in for about 18 months, which included holidays in France and Spain, so it has an interesting history.

The car is a late Mk 1 manual and has factory **power steering**. The tyres are good and despite not using it much, the rear suspension bearings and a front displacer have been renewed/ replaced over the years. The **snowberry white** paint is very fair and the **black upholstery** is very good. It is **registered to next January**.

A few years ago. I was asked to use it as the bridesmaids and flower girls car at at up market wedding in Canberra. So though not in pristene condition, it cannot look to bad. I think **\$2000** would be a fair price.

## SPARES UPDATE

*by Pat Farrell*

We have been fortunate to obtain a supply of Tasman/ Kimberley oil filters, which also fit anything with the E series 4 motor. They are Ryco filters and are part number Z 83 A . \$15 each. We only have 5 so be quick !

Also, we have 11 or so R 2302 P air cleaner elements for the twin carb Kimberley . \$5 each.

**Or \$100 the lot !**

WAKE Eric	14 Wyoming Way Happy Valley S.A. 5159	(08) 8381 4453	Mk 11
WATSON John	10 Eastcote Lane, Wellington Kent	[081] 856 3013	Mk 11 Morris
WHEELER Bill	England DA162X RMB 123 Wickerslack Lane Queenbeyan N.S.W. 2620	(06) 297 4936	Mk 1 1800 (U.K.)
WHITE Alicia	63 Roseash Street Woodridge QLD 4114	[07] 320 83951	Mk 11 1800
WILSON David	RMB 6169 Red Hill Vic 3937	{03} 598 92093	Looking
WOOD Tony	31 All hallows Road Blackpool England FY2 0AS	0011 441 253 352 730	
WYNEN David	Box 1104 Thornsbury Vic 3071	0417 303 443	Mk 11

## FROM THE BACK SEAT

### **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell 03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

### **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

### **PUBLIC OFFICER**

David Hopper [ 076] 333 383  
8 Evergreen St, Toowoomba QLD 4350

### **EDITOR/ SECRETARY**

Daryl Stephens 03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

### **A.M.V.C. Sub Committee**

Pat Farrell as above  
Geoff Marshall 03 9877 1425  
19 Anne Street, Blackburn Vic 3130

### **SOCIAL CONVENORS**

*Brisbane*; Peter Jones as above  
*Melbourne*; Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489

Opinions expressed within are not necessarily shared by the Editor or Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

Cut off date for inclusion of articles in the newsletter is the 25 th of the even month. Publication date attempts, often in vain to be 25 th of the odd month

# FOR SALE

**Vandan Plas 1100** Manual Registered with RWC 43,000 miles Ex New Zealand car Anne Harris [07] 3376 5935

Mk 11 1800 Man **Full instrumentation** Rescued from tip Ron Peters \$200 [03] 9743 5858

2 x Mk 11 1800 manuals \$400 the pair will separate Bec Dunn [03] 9755 1028 Ferny Creek Vic.

Mk 11 1800 Auto Mustard R.W.C. \$1200 Sam Hannah Mulgrave Vic [03] 9842 5071

Mk 11 1800 **Auto** 88,000 miles Ray Campbell Orange N.S.W. [The car is not a lemon!] \$2200 Registered [063] 627 781

Mk 11 1800 1970 Man 28,000 miles always garaged sugar cane/ blue Warrigal [Country Victoria] As new \$3,000 Jean Brown [03] 562 31647 [Editor's note- I have driven this example and the clutch appears tired]

Mk 1 **Kimberley** manual excellent original condition, many period accessories, low miles, full history. Club Member Graham Halloran [02] 6553 0164 Wingham NSW **\$2,500**

Mk 11 Auto {early one} no. 1173 **Freebie** Russell Greenwood Geelong [03] 52 29 7780

"Now that my Kimberley has gone to a better place, I have for sale the following competition bits". Ex works head complete with cam and distributor graphed to suit.

Steel roll cage.

Inner C. V. joint

Set of fibre glass panels [doors missing]

Adaptor for oil cooler

Tachometer for dash top

Gaskett sets etc.

All offers accepted or refused as the case may be. Phone Pat Farrell [03] 9762 457 Mobile 015326606

Mk 11 1800 69,000 miles one owner no rust, reg or RWC Two tone green E.C. Club member Geoff Marshall [03] 9877 1425 \$500

Mk 1 Ute **No rust at all** always garaged no reg or RWC \$1200 Geoff Marshall Original seat [03] 9877 1425

Mk 11 1800 recent quality respray - including the engine bay- in two pack- malimo green 12 Months reg and RWC Ready to drive - needs no work \$1500 Club member Jim Duffin Geelong Vic [03] 527 3215 [Manual]

Mk 1 Auto 39,000 miles always garaged as new cream/ red deceased estate reg and RWC David Acheson Devenport [03] 642 861 64

Tasman 60,000 miles Man 10 months reg plus complete auto car and other spares Chris Roffey Windsor QLD [045] 878 475 \$2000



---

# LANDCRAB

CLUB OF AUSTRALASIA INC.

---



Welcome to newsletter number 77 for December 1997 and January 1998

## Aussie Jingle Bells !

Dashing through the bush, in a rusty Holden Ute,  
Kicking up the dust, Esky in the boot.  
Kelpie by my side, singing Christmas songs  
It's summertime and I am in my singlet, shorts and thongs.

Oh Jingle Bells, Jingle Bells, Jingle all the way,  
Christmas in Australia on a scorching summer's day !  
Oh Jingle Bells, Jingle Bells, Christmas time is beaut,  
Oh what fun it is to ride in a rusty Holden Ute.

Engine's getting hot, dodge the kangaroos,  
Swaggie climbs aboard, he is welcome too.  
All the family's there, sitting by the pool,  
Christmas Day, the Aussie way. by the barbeque !

Come the afternoon, grandpa has a doze.  
The kids and Uncle Bruce, are swimming in their clothes.  
The time comes round to go. we take a family snap.  
Then pack the car and all shoot - through before the washing - up.





# INTRODUCING...

Frank Van Groeninger      Lot 22 Wylie Road      [03] 9737 9618      Mk 11 1800  
Silvan Vic 3795

Frank is currently performing a mechanical restoration, with the help of Paul Nicholls.

Paul Tinley      28 Marri Road      [08] 9246 7226      Mk 1 1800  
Duncraig, Perth, W.A. 6023

Paul is one of the lucky ones- his one owner '66 Mk 1 has only done 45,000 miles.

Nathan Davis      Box 554      [02] 6585 6046      Mk 11 1800  
Wauchope NSW 2446

Nathan's car is under restoration.

Mario Stagnitta      78 Somerset Road      [03] 9359 0403      Mk 1 1800  
Campbellfield Vic 3061

" We had a reconditioned motor fitted some 12 years ago. The car has been kept in very good condition - both mechanically and body appearance. I have sprayed it twice since purchase. The latest recondition was to re upholster the interior - strip the body and enammel spray, retaining the original indigo blue.

The car has become part of the family and hopefully will be with us for a long time to come. The car is mainly driven in the city but every now and then I drive to Echuca for the weekend. The last long trip was to the Gold Coast in 1985. Current mileage is 189,000 miles. "

## AND WELCOME BACK TO...

It has not been suggested that these people missed the deadline for annual subscriptions and therefore the club directory in the last newsletter !

Stuart Ratcliff      212 Castle Hill Road      [02] 9889 1690      Rally car  
West Pennant Hills NSW 2125

Peter Roberts      89 Flinders Drive      [08] 8396 0554      Mk 1 1800  
Valley View S.A, 5093

Bruce Summerell      Verona Road, Quaama      [02] 6493 8522      Mk 1 Ute  
Via Bega NSW 2550      B/H [02] 6492 9575

Eric Pitman      19 Church Road      [060] 271 209      Mk 1 ute  
Yakandandah Vic 3749      2 x Mk 11 Sedans

Russell Greenwood      175 Kilgour Street      [03] 5229 7780      2 x Mk 11 s  
East Geelong Vic 3219

Michael Gilmour	53 Remembrance Drive Tahmor NSW 2573	[02] 4681 8887	a few Kimberley's
Meg Ellington	R.M.B. 1146 Chiltern Valley Rd Rutherglen Vic 3685	[060] 328 303	2 x Mk 1 s 2 x Mk 11 s
{Meg is the widow of Tony Ellington }			
Bruce Gardner	56 Herbert Street Parkdale Vic 3195	[03] 9580 8180	A 99 Westminster
Stuart Glover	36 Maygar Street Windsor QLD 4030	[07] 3870 3761 B/h [07] 3840 7090	Mk 11 1800



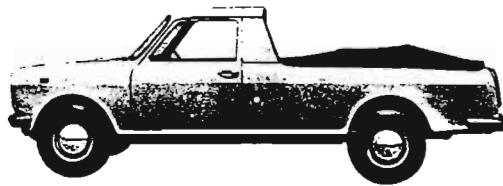
## **CUSTOM ENGINEERING**

- \* LIGHT PRECISION & GENERAL ENGINEERING
- \* FABRICATION OF HARD TO GET PARTS
- \* ADAPTORS
- \* MODIFICATIONS
- \* PARTS RECONDITIONING AND REPAIR
- \* RELIABLE SERVICE, QUALITY WORK AND PROMPT DELIVERY

Phone Garry on 015 117734 or Chris on 0412 552615

77 Fitzsimons Lane Templestowe, Vic. 3106 Ph. (03) 9846 5525 Fax (03) 9888 5212

MAIL ORDER AND CREDIT CARD WELCOME.



# SUNDAY MARKET

DROMANA DRIVE-IN EVERY SUNDAY

8am-1pm

Free Admission

Come and join the regulars looking for that special bargain. See the LARGEST GARAGE SALE on the peninsula. Childrens playground and refreshments.

Something to sell? turn it into CASH!!!

Sell from your truck, car or trailer. \$12- per site.  
Stall holders required. New, Old, Craft, Produce. ANYTHING!

ALSO:

EVERY SUNDAY BEGINING 3RD AUGUST

## CAR PARTS MARKET



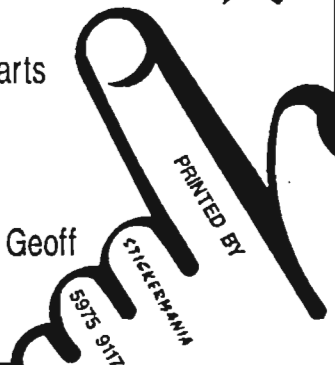
SAME TIME SAME PLACE



Stall holders required. Sell all your Auto Spare Parts  
Car accessories anything Auto  
\$12- per large site

To book a stall at the friendly market simply call Geoff

03 5982 2556 Anytime.





*The Austin Flying 'A' Enthusiasts Club*  
*The Club For All Austins*



*Don Robinson*

*120 Fennyson Street*

*Cambridge Ph 07 8276802*

*Wh 0262768550 Fax 07 8276886*

*1998 All Austin National Rally*

*Organisers*

*Kevin Heyward*

*10 Maunganui Rd Birkenhead*

*Auckland Ph (09) 4808745*

*Fax (09) 4808756 Wh (026) 742526*

**TO ALL AUSTIN CAR CLUBS IN AUSTRALIA.**

23/08/97

Dear Editor of Club Newsletter,

Could you please include a copy of the All Austin National Rally in your newsletter or let your members know about it.

The Austin Flying 'A' Enthusiasts Club is holding the 2nd All Austin National Rally in Cambridge, New Zealand on the weekend of 17th and 18th January 1998. We would like to see some Australian Austin owners over for this weekend. Some spare cars will be available to drive on this weekend or bring your own and do a tour of NZ. Enclosed is a copy of the NZ Automobile Association Procedures for Motor Vehicle Clearance Ports of Auckland, Temporary Imports. Also is Registration Form and details of the Riverside Motor Lodge where the Rally will be based.

Please send all correspondence to: Don Robinson



Yours in Austineering

Kevin Heyward  
Don Robinson  
Organisers.

5



**CITY OF DUBBO**

# **ANNUAL MOTOR FESTIVAL**

(Formerly ALL BRITISH VEHICLE DISPLAY)

HOSTED BY THE ROTARY CLUB OF DUBBO WEST INC  
PO Box 526, Dubbo NSW 2830

**YOUR SPECIAL INVITATION**

**TO THE**

**CITY OF DUBBO ANNUAL MOTOR FESTIVAL**

**SATURDAY, 7 MARCH 1998**

Yes it is on again, so please note the date in your diary!

Those who attended the All British Vehicle Display earlier this year will agree that it was well organised with plenty of trophies, a friendly atmosphere and lots of fun for all.

While we will feature British vehicles once again, next year's display will be open to **all makes** of vehicles. We will continue to provide as many categories as possible, with an enlarged street parade and our special under-cover venue. A courtesy bus will be provided throughout the day to transport people from the venue to motels and the CBD for shopping.

A special dinner dance will be held at the same venue on Saturday night as well as the popular Sunday morning breakfast.

In line with the Festival theme, there will be more and varied displays and bigger and better entertainment.

We would love to see you participate so start preparing your vehicles and navigate to Dubbo on 7 March, 1998.

More information will follow in due course, but if you require any further information in the meantime, do not hesitate to contact me.

**Vaughan Johnston**  
Chairman  
(068 844 408)

# A over A in A

[ Home of the Rotten Adelaide crows]

It is envisaged the "99" rally will have 4 runs over this Easter week end;

- A short orientation tour of Adelaide, including historic Port Adelaide and the local beaches on Friday,
- The Barossa Valley, including visits to a Winery (or more than 1 if you wish) on Saturday,
- Through the Adelaide hills calling in at such places as the historic township of Hahndorf & the National Motor Museum at Birdwood on Sunday,
- A tour of the south coast beaches including Victor Harbour & Goolwa with the opportunity of having lunch & a trip on either the Mundoo paddle steamer or the steam driven "Cockle Train" on Monday.

We expect that entrants will have the option to attend a Welcoming dinner on the Friday night & dinner dance on the Sunday night. Lunches will be catered for during the week end.

To assist us in planning Austins Over Australia "99", if at this stage you are considering attending our rally we need to know. Also if you would like to avail yourself of the accommodation at the Marineland Holiday Village would you kindly complete the enclosed questionnaire & return it to the indicated address as soon as possible. If you intend sharing accommodation at the Village with another family of rally entrants, each family is requested to complete a questionnaire. Your response to this questionnaire is only an expression of interest at this stage, financial commitment will not be needed until 1998. Once we have all of your responses we will be able to determine if we can take up the offer of having sole occupancy of the Marineland Holiday Village over Easter "99", therefore your assistance in this matter would be really appreciated.

We have set up a "web site" should you have access to the internet. The address is <http://white.bio.flinders.edu.au/austin7>. This site will be updated regularly.

If you do not have access to this type of modern technology, do not despair, we will update you with regular newsletters.

Please feel free to contact any of the rally committee by either phone or by mailing to the following address:

Austins Over Australia "99"  
41 Liascos Avenue  
Newton S.A. 5074

This letter has been circulated to all previous rally entrants & known Austin clubs. If you know of someone who may not have been on our circulation list who you think may wish to attend this rally, please pass on one of the enclosed questionnaires.

We look forward to your reply,  
Your Austins Over Australia "99" Committee

Dave Hall (Rally Director)	(08) 8337 7045
Ralph Drage	(08) 8251 2637
Ian Jones	(08) 8447 5861
Geoff Carroll	(08) 8270 3841

7

# Mightabeens

by Tony Davis; supplied by Allan Hogg

## Leylands Pre '76

How dare they !?

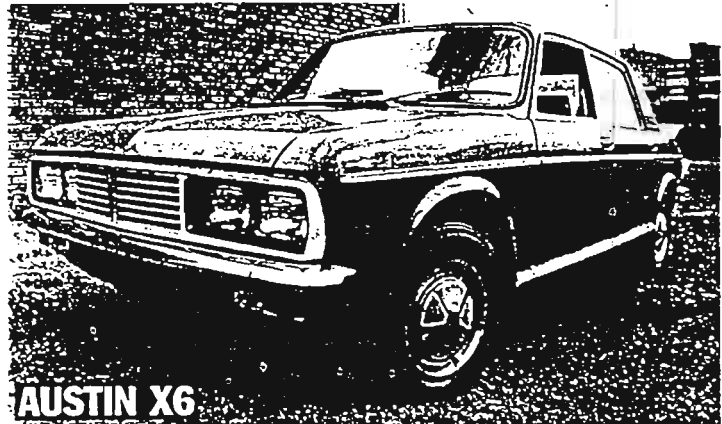
Forget "The Big Three", it's now "The Big Four". From the makers of **Rover, Daimler and Jaguar**, here's the most advanced family car ever built in Australia ; a sophisticated *six cylinder* model to eclipse Holden, Falcon and Chrysler.

That was the rallying cry for Leyland Australia's locally developed Austin X6 sedan, which replaced the brilliant four cylinder Austin 1800 in 1970.

Available as the **Tasman** [\$2598} or **Kimberley** {\$2888 ], the X6 was front wheel drive. Its 2.2 litre engine sat east - west, perhaps the first time an in line six had been shoe horned in that direction. This required a separate electric fan, another rarity for the era . There was also full flow ventilation, hazard lights [park anywhere lights] and a variety of fancy features.

The enigmatic styling was local , too. Crisp and clean from some angles, it had an almost rear engined Eastern European look about it from others.

The X6 boasted 85% local content. The use of Austin 1800 body structures and an "advanced" version of that models Hydrolastic suspension enabled Leyland to develop the entire car for just \$4.5 million. Output was 67 KW in the one carb Tasman and 86 KW in the twin carb Kimberley. Transmissions were a four speed manual or three speed automatic. Handling was good and so was the ride



Liking it so far ? Well. now for the bad news. Like many Leylands. the concept had a lot to commend it . The failure was in the execution . The X6 was short on the low down torque which made the Aussie big sixes so effortless to drive . And on a marketing level, family buyers still considered front drive a bit poofy.

Smaller than its "big six" competitors - shoulder room was particularly tight- the X6 was no cheaper to run and was very heavy on fuel . The seats were poor and the X6 had a stiff cable operated gearchange; controls and switches that worked slowly or not at all, and wipers that didn't sweep the whole screen . Oh, and the poorly positioned pedals, heavy steering [ with plenty of kickback ] and suspension which went thump in the night. And day.

Added to all this, there was grim build quality and miserable reliability. In June 1972, Mark 11 Tasmans and Kimberleys brought minor, much need refinements But bigger and better things were coming- Leyland Australia was readying the car to totally transform the company- the P 76



# MAILBAG



Geoff Cooper  
10 Tonks Street,  
Moorooka  
Q.L.D. 4105

Introducing car number 2 - 1969- 1800 Mk 11 Auto, saffire blue - now on its fourth owner, originally from Toowoomba, Q.L.D.

— a brief ? history of my acquisition of this car —

About three years ago, I was offered for spares the above mentioned car which was destined for the dump — the paint work was in very poor condition with a little rust in the bottom of the doors — but overall rescueable. The engine and transmission were shot, but the interior was cream and immaculate I decided to spent a 'few' spare weekends doing it up..

I acquied a reconditioned Mk 11 motor, three auto gearboxes with associated bits and pieces and made a start. Fellow members who have removed and replaced an engine will know what a swine of a job it is.

From the three gearboxes, I decided to rebuild one. Anyone who has attempted this will know how difficult it is to obtain new parts other than clutches, bands seals and gaskets. The torque converter was no problem of course, but the oil pump was a nightmare and was replaced three times before I finally procured a brand new one. After that , everything came together without further drama.

One hundred and one jobs later it was finished and repainted in the original saffire blue — a good deal of polish and it came like new. I lost count of the number of weekends [ spread over three years ] that this project took. Needles to say, I'm rather proud of the end result and accept the admiring glances and occassional complement on the appearance with gusto.

Somehow, I do not think I will repeat the experience !

# Performance Update

February 1997

## HUFF AND PUFF

The principal requirement to produce power in the internal combustion engine is to combine a precise mixture of clean oxygen and fuel, then igniting this mixture.

This ignition leads to a rapid rise in temperature as the mixture burns, pressure increases rapidly and forces the piston down the bore. Hence power is produced.

The horsepower and torque output is directly proportional to the rate at which the mixture enters the combustion chamber.

In other words, It is the density (or weight) of the charge which determines the power output. Regardless of pressure, an engine responds to density

Therefore the more mixture that can be crammed into the cylinders, the greater the potential horsepower output will be.

With conventional tuning methods we aim to improve airflow by modifying cylinder heads with large valves, camshaft profile changes coupled with multiple carburetors or fuel injection and high compression etc. etc.

There is an even more efficient tuning method!

### THE SUPERCHARGER IS BACK - BETTER THAN EVER.

Forced induction is not new to the automotive world. It was used in the early 1900's and gained much respect pre WW1 with Alfa Romeo, Auto Union and Mercedes fielding Grand Prix racing cars with forced induction.

Following further development during WW2 supercharging became a popular bolt-on kit for many vehicles. In particular the MG T-Series XPAG engine was the basis of many kits sold in the fifties.

### SUPERCHARGER TYPES

There are two distinct types of mechan-

ically driven supercharger - the blower and the compressor.

Atypical blower is the Roots type where two figure eight section rotors run in opposite directions. Air is drawn in one side and blownout the other. The air passing thru' does not alter in pressure as it passes thru'. In fact the inherent heat gain causes a loss in air density. Centrifugal blowers are basically an impeller (or fan) with radial vanes spinning within a casing. Typical of this type is the Shorrock supercharger which was a very popular bolt-on kit in the fifties and early sixties. Whilst generally more efficient than the Roots type they are particularly suited best in applications operating in a limited rev. range.

### New Generation Superchargers

Although originally invented in Sweden in 1939 this design has only recently been made available in sizes to suit automobile applications. A total rethink in design and utilizing the latest extrusion, casting and manufacturing technology to provide near optimum engine efficiency.

### Twin Screw Superchargers

are extremely efficient in both Volumetric and Adiabatic (or overall) Efficiency

The high thermodynamic performance is

due to internal compression of the charge combined with very fine clearances rotor to rotor and casing to rotors.

The effect of this internal compression is to increase the density and therefore the weight of charge per revolution and consequently reducing the temperature rise usually encountered for a given weight of charge.

The almost flat torque curve is an ideal characteristic for day to day motoring, giving outstanding engine flexibility and overall performance.

These features enable an extremely efficient compressor to be produced in a very compact packaged. In fact, the size of the compressor unit is the reason a BMC Mini kit was initially thought feasible

### How does it work ?

Within the extruded light alloy casing there are two intermeshing rotors. The male and female rotors are helically cut and geared to run in sympathy without touching. Because of the relative movement of the two rotors the inlet gas is *squeezed* into a smaller space as it travels along the device, creating the increase in pressure. Because the rotors don't touch, the friction which plagues other superchargers is not present. Friction causes heat, a heat buildup can undo work performed by the supercharger. A hotter, thinner charge loses power and frictional loads mean that a higher level of engine power is required to drive the supercharger with a corresponding increase in fuel consumption.

Each Autorotor Twin Screw Supercharger Kit is engineered for a particular vehicle. There is no such thing as a "universal" kit which will hopefully do the job. Within the vast range of standard supercharger sizes there is bound to be one which precisely matches the particular engine requirements.

The classic 'whine' of a supercharger may be muted now but modern materials and production techniques have ensured the potential is higher than ever!

### This Issue

HUFF AND PUFF	1
NEW GENERATION SUPERCHARGERS	1
HOW DOES IT WORK?	1
MINI SUPERCHARGER KIT	2
PRODUCT RANGE	2



**HIGH PERFORMANCE  
PRODUCTS** (03) 9874 1800  
(015) 880 420



A Division of Dansk Design Pty. Ltd  
ACN 050 156 009



# Twin Screw Supercharger Kits

## The Mini Supercharger Kit

The supercharger is belt driven and in this installation the most convenient method is to drive it off the crankshaft. Due to the severe space limitations at the radiator end of the engine compartment it has been found necessary to replace the standard 'V' belt drive system with the latest Multi-V Serpentine drive belt system. This may sound simple but it entails replacing every single drive pulley on the front of the engine, including the harmonic balancer. The Sprite/Midget and 1800/MGB kits currently being developed will no doubt require a similar arrangement.

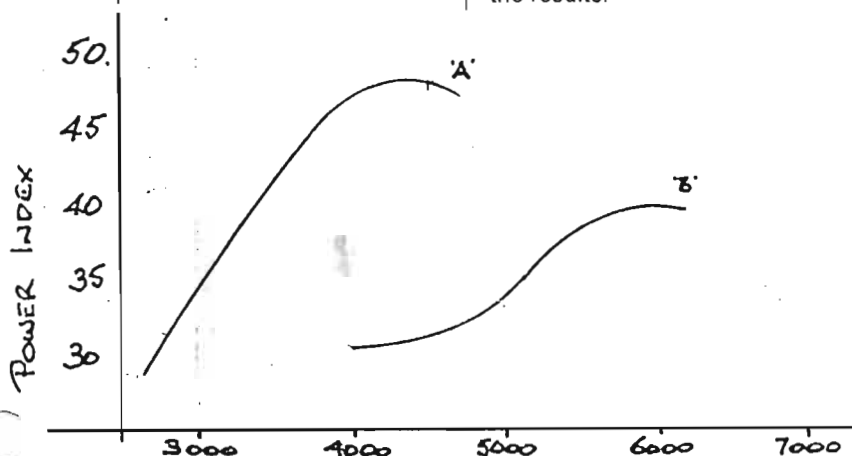
Every Mini Supercharger kit comes with a very comprehensive introduction and fitting instructions, so I won't repeat them here. Instead, let's cover some of the development behind this kit.

The 'prototype' Mini started life as one of only 1000 Mini 1275 LS types produced.

~~It was a standard Mini Cooper S engine.~~

A reconditioned engine has been fitted, the only modifications carried out being a reground camshaft, machining of the piston crowns and the removal of metal from the combustion chambers, in order to reduce the compression ratio. We could only manage 9.0:1. Although our aim was 8.0 or 8.5:1 this could not be achieved with the parts available at the time.

A reasonably "low" compression ratio is desirable in a forced induction engine because the increase in induction pressure has the effect of increasing the effective compression ratio. So it is necessary to build an engine with this in mind. The accompanying power curves show the results.



Specification: 'A'  
Supercharged Mini LS  
1330 cc.  
9.0:1 Comp. ratio  
228/234 duration Cam.  
Standard Rockers  
Standard 1100 'S' Cyl. Head  
Single SU HIF6  
Brownrigg extractors  
HP Hi-Flow Muffler

Specification: 'B'  
Modified Mini Cooper 'S' Mk  
1380 cc.  
11.5:1 Comp. ratio  
SPVP4 Cam.  
High lift 1.5:1 Rockers  
Stage 3 Cooper 'S' Cyl. Head  
45 DCOE Weber  
Brownrigg extractors  
HP Hi-Flow Muffler

**Note 1** At the time of our test we were unable to locate a standard 1275 Mini for test and comparison, so we settled on a comparison with a highly modified road going Cooper 'S'. The SPVP4 Cam is considered by many as "State of the Art" it has 254/244 duration @ .050" with an operating range of 3500 - 8000 rpm.

**Note 2** The Supercharged Mini displayed a lack of adhesion on the dyno rollers.

© Hans Pedersen 1997

Every effort has been made to ensure the information in this newsletter is true and complete to the best of our knowledge. All recommendations are made without any guarantee on the part of the author, editor or publisher. Because the quality of most parts, materials and methods are beyond our control, we disclaim any liability incurred in connection with the use of this information.

OUR RANGE OF PRODUCTS AND SERVICES IS CONTINUALLY EXPANDING

ALSO AVAILABLE:

**HI-FLOW**

Sports Air Filters

S.U. Weber

Ultra Hi-Flow Air Filters

S.U. Weber

Chrome Moly Tubular Pushrods

BMC A&B Series

Rover 3500 Leyland P76

Engine Breathers

BMC Mini range

Engine Steadies

BMC Mini range

Exhaust Headers

BMC 1800 range

BMC Spridget range

BMC MGB range

BMC MGA range

Exhaust Mufflers-Stainless Steel

Round and Oval sections

Single and Twin tailpipes

Exhaust Systems-Stainless Steel

Rover 3500

BMC Mini range

BMC Spridget range

BMC MGB range

Hidural bronze Valve Guides

BMC B Series

Lightweight Camfollowers

BMC A&B Series

Alloy Rocker Cover

BMC B Series

Supercharger Kits

BMC Mini range

BMC Spridget range - Avail. soon

BMC MGB range - Avail. soon

PLUS

Yella Terra Roller Rockers

K & N Air Filters and Elements

A.R.P. Aerospace Quality

Specialty Engine Fasteners-

Jet Hot Racing Coatings

Autorotor Twin Screw

Superchargers



**HIGH PERFORMANCE PRODUCTS**  
(03) 9874 1800  
(015) 880 420

A Division of Dansk Design Pty. Ltd  
ACN 050 195 009

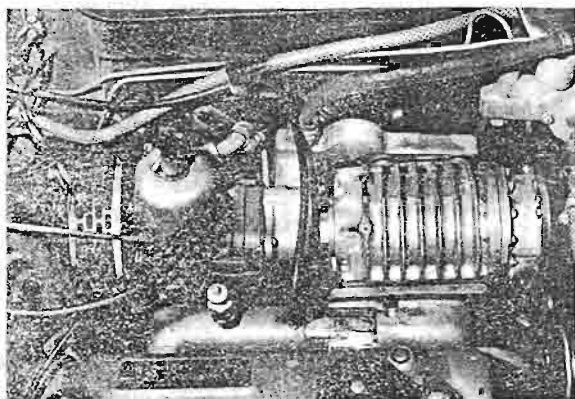


# BLOW FOR GO

An Austin 1800 is a sedate family car but bolt an EKINS supercharger to one and it's something else!

At first glance the dark green Austin 1800 looked like any other 1800, there was nothing to suggest it wasn't. But beneath the bonnet there lurked a secret. The owner had fitted an Ekins Supercharger. Even when the key was turned in the ignition and the engine immediately sprang to life there was still nothing to suggest it was anything but standard. It idled perfectly and there was none of the lumpiness associated with hot cams and multiple carburettors. The only thing that gave the supercharger away was a slight whirring noise as the impellers spun in their casing and this was only noticeable to an experienced ear.

On the road the 1800 suddenly became a fast, healthy playgirl forgetting its normal image of a staid family maid. It immediately sprang to 60 mph in just 8.2 sec, almost halving the standard time of 15.2 sec, 80 mph came up in 14.1 sec instead of the normal 31.8 sec and we saw 120



The Supercharger bolts straight onto the engine and no further modification is necessary. Ekins supplies the full kit including manifold.

## COMPARISON TABLE

	Standard 1800	Supercharged 1800
0-30 mph	4.5 sec	3.4 sec
0-40 mph	7.5 sec	4.9 sec
0-50 mph	11.8 sec	6.4 sec
0-60 mph	15.8 sec	8.2 sec
0-70 mph	21.0 sec	11.4 sec
0-80 mph	31.8 sec	14.1 sec
STANDING $\frac{1}{4}$ MILE	20.5 sec	15.8 sec
TOP SPEED	93 mph	120 mph



From all outward appearances there is nothing to suggest that the Austin 1800 is anything but a standard car. But the performance is something else.

mph on the speedo. The standard 1800 will run out at 93 mph. And over the quarter 5 sec was carved off the standard time of 20.5 sec.

The difference in the car was startling and it was hard to believe all this performance could be had from just fitting a simple supercharger. And, of course, with this new found source of power the 1800 became a much safer car. Now it had the extra power to pull it out of tight spots and that extra urge for hard cornering. But all the time it was quite happy to potter along in top gear in city peak hour traffic with not the slightest hint of a protest. The fuel consumption didn't suffer either, in fact it remained the same as when the car was standard, 26 mpg.

The \$290 was well spent on the supercharger, there were none of the problems of fitting hot cams, heads and multiple carburettors which are always in need of tuning. The Ekins Supercharger just bolts straight on to the inlet manifold, also supplied by Ekins, no other modifications are needed.

This is also helpful when the time comes to sell the car or trade it in. The supercharger just unbolts and the standard carburettor and manifold bolt back, there is no evidence of previous modifications as is the case with head jobs or other forms of hotting-up.

Full supercharger kits are now available from Barry Ekins and include the supercharger, manifold, pulleys and belts. A carburettor is extra but in many cases the existing one is used.

Supercharging is nothing new. It has been proven over the years, as one of the simplest, easiest and cheapest ways of improving the performance of an engine, right throughout the rev range. Once installed it does not require any attention and places no undue strain on the engine. Supercharger kits are available to suit all popular model motor cars. For further details cut out the coupon below and post today.

## EKINS SUPERCHARGERS

18 Willyama Ave, Fairlight, N.S.W., 2094.

969-1785 — A.H. 94-1233

Bolt-on kits now available to suit most popular models including the BMC range, Corolla, Mazda, Peugeot, complete Holden and Ford range, including V8s. Prices from \$290 include, manifolds, belts and pulleys. Carburettor is extra. No body modifications are required and no engine balancing is necessary. For further details post the coupon today.

BARRY EKINS (969-1785)  
SUPERCHARGERS AND TURBOCHARGERS  
18 WILLYAMA AVE.,  
FAIRLIGHT, MANLY, N.S.W., 2094.

PLEASE SEND COMPLETE DETAILS TO:

Name

Address

State

P code

Make

Model



# Vehicle History Sheet

*Name.* JOHN and KIMBERLEY FRANCIS

*Address* 21 MASEFIELD AVENUE, BATEAU BAY

*Vehicle type & year* 1973 LEYLAND KIMBERLEY X6 SERIES II

6 CYLINDER 2.2 LTR OH CAM FRONT WHEEL DRIVE  
DISK BRAKES

*Photo supplied.*

Supplied by Allan Hogg

## BRIEF HISTORY

**When purchased had minor problems - water pump noise, head gasket blown, master cylinder leak. All fixed by Tom Papadatos, 5 Star T&K Auto.**

**Purchased recently from the original owner of some 24 years. This 6 cylinder "Land Crab" as they were called is not nearly as much a Lemon as some would have you believe.**

**Built like a country porta loo it is huge inside. The boot is big enough for two sets of golf clubs and buggy's, some luggage and the picnic things. Rust it has never heard of and it rides and handles very well for a 73 sedan and to drive, well, you could liken it to driving your big comfy lounge chair down the street.**

**My daughter, Kimberley, drives the car to Uni in Newcastle each day and each evening she returns I always ask, "how's the Kimberley today" but I am never sure which one she is answering for! To my surprise she loves the car and I too - it's a beaut. Apart from a big problem I had in the availability of master cylinder parts, faded original paint and just a few blemishes, the car is in excellent condition.**

Only been 50,000 miles since new, driven by the one owner. The Kimberley was the top of the line model. The cheaper version being the Tasman, which had only 1 carby and not as many luxuries (Wow it must have been basic!). The car is looking great and original and always gets a comment when out and about.

**Now some Kimberley comments from Kimberley - the driver.....**

**From the drivers seat.....having recently moved from my beloved Mini, "Nermil" into a car twice its size, has changed my life drastically. I had to learn to reverse park again and I have realised there are lines to drive between and that every road is not a four lane highway as one might believe from a Mini perspective.**

**Apart from the slow acceleration (compared with the normal Mini) and a few parking problems, I'd have to agree with Dad about the cruisy, comfortable feel of my name sake. I no longer dodge small pot holes as if they were going to swallow me, I just glide right over and barely feel a bump with independant hydroelastic suspension. I don't know much about cars but I love my gentle beast and feel confident knowing it will take me where I want to go in style and comfort and knowing there is enough room in the boot for "Nermil" if I need some backup!!**

**MORE VEHICLE HISTORY SHEETS NEEDED - HAVE YOU FILLED ONE OUT FOR YOUR VEHICLE YET???** 13



# RICK & HELENA ENTERPRISES

A over A went well at Toowoomba. And then we left 'Tenacity' in the care of a local member and went about my **country music tour**. At present after having collected the old Mk 1, we are at Port McQuarie for 2 shows. Then home to Taralga mid July. I guess this would be the longest journey in time that an Austin has been tied up with an A. over A rally.

Bought my monthly copy of **Restored cars** no. 123 just the other day and nice to see Tenacity and the other Austins at Toowoomba.

RICK HOPKINS MUSIC • PO BOX 51, TARALGA, NSW. 2580 • PH. 015 297 783

Page 13

## PAJ'S TECH TIPS

*by Peter Jones*

### Do it Yourself Crack Testing



A cheap and quick way to crack test your car parts is first to wire brush and degrease them, then dry them completely and warm them to between 100 and 200 degrees centigrade (temperature is not that critical). Now dip the part into some kerosene, hose off and again dry them. The next stage is to sprinkle the parts with your wife's or girlfriend's best talcum powder, clean off any excess powder and again warm up the parts to be tested.

If there are any cracks in the casting these will now show up as a black line in the talcum powder on the surface of the casting. This method of crack test works about 75% of the time and could save you time, money and prevent you from taking a truck load of parts to the local crack tester.

### Lucas Distributor Disassembly

When removing the knurled micro timing adjusting nut, do not forget to remove the small circlip from the end of the screw thread, this circlip can sometimes be unseen mainly if the nut is at the end of the thread where it will cover the circlip. Also do not lose this or the spring clip which is located behind the adjusting nut, both parts are hard to replace.

### Miscellaneous Tips



Don't do any body panel repairs (panel beating) until all rust has been removed and replaced by good metal, do not use putty.



The next time you have to replace a radiator hose apply a small amount of silicon bath sealant on the inside of the hose, this will help to seal it and prevent corrosion.





# LEYLAND PARK

*David & Maria Huck*

Dear Daryl,

I don't write to you very often, and I didn't see you at Toowoomba, but I'm here now and writing to thank you and the committee for your work in the Club. The newsletter is most important- always amusing and often has handy hints. We members are obviously at different stages of knowledge of our cars and owner hints are most useful.

My manual mk 11 has arrived back from **Perth** where **Ken Lyle** has done a **marvellous** restoration job on everything mechanical, hydraulic, mostly electrical, outer paint, all rubber except tyres, even a new windscreen and halogen lights. The engine bay looks as if it has come straight from the factory with all fastenings etc zinc coated- the engine painted the correct colour with a Hot Run tested label as well. The interior was left as it was being good anyway. Only detail work is necessary here for an as new car. Thanks very much Ken for a job well done !

Of course, I still have problems. Maybe a member could help me with them.

My late model mk 11 with 14" road wheels has heavy steering at parking speeds as owners will know. However, the early mk 11's and all mk 1's had 13" road wheels which have slightly less heavy steering and seem more comfortable [?] I am therefore considering putting a set of 13" road wheels instead of the 14" in the interests of easier steering. I believe it will give a lower final drive ratio, and therefore marginally better acceleration. The question is if I installed the strip speedometer from the 13" wheeled donor car- presumably the speedo would be calibrated correctly for the 13" wheels and the later model car. Is this so ?

My next problem is that I don't like the large thin rimmed wheel. I have inquired locally but there are apparently no leather covers for 16 1/2" steering wheels available, and the bumps on the back of the standard wheel are necessary for a good grip. I say this because I've tried a 15" SAAS leather trimmed wheel without humps. The thing was positively dangerous it required so much effort. Does anyone know what steering wheel was used on the London to Sydney marathon cars ?

In the family, we run a mk 1 1800 [ present at Wangaratta and Toowoomba events] and a mk 11- the restored one. They have each required a rear displacer unit from my dead mk 1 donor car so that at present I am without rear displacer spares. However, I will presently get another donor car for more spares. The question is as these displacer units are all old ones, how many more years will they last ? Is it possible that a batch of new ones could be made ? I do not like running around on old rubber !

My wife and I thoroughly enjoyed Austins over Australia at Toowoomba last Easter, and happily I managed to go up and back without getting booked ! I thought the Queensland group put on a most interesting show, but I never managed to get a picture of all the landcrabs together. The only criticism was there was not enough time- Easter needs to be 2 weeks!!

Greetings to all Landcrab owners. You are all most welcome to call at our place for a cuppa and a yarn. But please ring first to make sure we are in.

## Modifications to Austin 1800 & Minis From memory

**Austin 1800.** Carby mods as recommended by a large carby specialist firm. Remove the damper of the SU carby by unscrewing the bakelite knob & cutting off the shaft adjacent to the knob. Then fit an **OA7 needle & a GREEN SPRING**. I don't remember anything about changing the jet, so I presume that wasn't (or couldn't be) done. Then tackle the aircleaner metal casing by drilling 4 equidistant half inch holes in the top cover to allow extra air intake. Position these holes so that the air still has to go through the filter & then indent the holes by hitting them with the rounded back of a ballpeen hammer this should prevent a whistling noise.

However while this did increase greatly the power plus better fuel consumption there was a problem with spark plugs. After a prolonged high speed run the engine was running rough. This was cured by changing the heat range of the plugs. I can't remember, except to say that it was a small change, (something like swapping N7 to N9 or maybe N9 to N9Y in the Champion range) & then My motor was perfect. My 1800 was a MK1 with a MK2 cylinder head but I had to make an indent in the firewall to fit it.

Now the problem of stalling & or refusing to start: The SU carby, particularly mounted on an angle tries to suck the slide towards the intake manifold & wears the casing, eventually causing a lip on the sides of the outlet hole. This causes the slide to stick in the partly open position & a few taps with the end of a screwdriver on the bottle should start the motor, however if you remove the bottle (2 screws) & feel with your fingers the sides of the hole you should notice a very small lip, so with a screwdriver scrape (chamfer) the sides, replace the bottle & no more problems. The minute aluminium particles that fall into the intake hole will disintegrate & not cause any problems

Now for wet weather problems. I have proved that a fine mist spray caused by following close to a lorry caused the HT spark to jump from the HT lead (on top of the HT coil) to the upright LT connection, this is easily fixed by bending the LT terminals down to a horizontal position therefor increasing the air gap. This cured for all times the family mini & my 1800.

# FROM THE BACK SEAT

## **PRESIDENT/ TREASURER/ LIBRARIAN KEEPER OF THE SPARES.**

Pat Farrell 03 9762 4457  
4 Wayne Avenue, Boronia Vic 3155

## **REGALIA OFFICER**

Mike Gilmour 047 81 8887  
Lot 57 Remembrance Drive  
Tahmor NSW 2340 .

## **DATA REGISTRAR**

Peter Jones  
4 Yarandin Court, Worongary QLD 4213

## **PUBLIC OFFICER**

David Hopper [076] 333 383  
8 Evergreen St, Toowoomba QLD 4350

## **EDITOR/ SECRETARY**

Daryl Stephens 03 9873 3038  
22 Davison Street, Mitcham. Vic. 3132

## **A.M.V.C. Sub Committee**

Pat Farrell as above  
Geoff Marshall 03 9877 1425  
19 Anne Street, Blackburn Vic 3130

## **SOCIAL CONVENORS**

*Brisbane*; Peter Jones as above

*Melbourne*; Paul Nichols 47 Moores Road, Monbulk Vic 3793 03 9752 1489

*Sydney*; Mike Gilmour as above

Opinions expressed within are not necessarily shared by the Editor or Officers of the Club. Whilst great care is taken to ensure that the technical information and the advice offered in these pages is correct, the Editor and Officers of the Club cannot be held responsible for any problems that may ensue from acting on such advice and information

Cut off date for inclusion of articles in the newsletter is the 25 th of the even month. Publication date attempts, often in vain to be 25 th of the odd month

# SPARES UPDATE

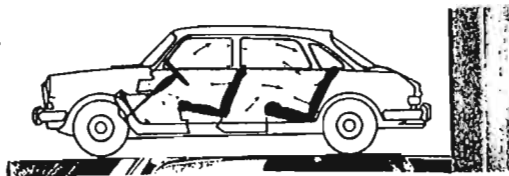
By Pat Farrell

The Club has decided to import a couple of the **new automatic transmissions** mentioned in the last newsletter. Please read the disclaimer at the bottom of Spare A Thought I Also, the Club believes they will fit, but *will not* accept liability if they do not.

Price is \$400 - more if customs get into the act

Arrival may be next winter !

Orders **must** be confirmed with a deposit of \$100.



From the autobiography of Billy Graham. I was in Church one morning. The fellow next to me fell asleep during the sermon. The preacher interrupted the sermon to ask me to awaken him.

However, before I had a chance to, a voice from the back boomed out. "You put him to sleep. Preacher, you wake him up ! "

# **SPARE A THOUGHT**

by Pat Farrell [03] 9762 4457 No calls after 9-30 pm EST !!

## **stickers**

Hot run - electronically tuned \$3

Floats on fluid- external \$8

Travelling Is class - external \$8

B,L. Motor sport \$8

Left and right hand weathershields- clear or tinted	\$50 each
X6 Complete front parker assembly	\$ 5 each
1800 Complete twin 1 3/4 SU with manifold and linkages from English 1800 S	\$250
1800 Deadens extractors [ from 1800 S]	\$200
X6 oil cooler adaptor	\$30 each - 1 only
Suspension Ball joints	\$60 each
Front windscreen rubber, with filler strip	\$60
Oil filter adaptor Z23 to Z9	\$ 8 change over
Constant velocity joint	\$100 each
Blinker stalks [1800]	\$50

## **POLYUTHERANE**

Rear engine mounts [1800]	\$35 change over
Front engine mounts " "	ditto
Bump stops upper and lower	\$20 pair [ 1 side] change over
engine steady bar bushes 1800	\$15 set of 4
lower fulcrum bushes	\$20 a set [ both sides]
Vibration mounts for gear change, exhaust etc	POA
Rear BMC mudflaps	\$45 a pair

## **Christmas special !**

Front windscreen rubbers with filler strips \$30

**Warranty claims should be made through the Clubs  
original supplier, and/ or Aussie post as applicable  
Also, the spares are for Club Members only !**

Allan,

Please place the following advertisement in the various Austin club magazines that you subscribe to.

### BOOKS FOR SALE

Haynes BLMC 1800 Workshop Manual  
Leyland Australia MkI&MkII 1800 Workshop Manual (including Utility)  
BMC Australia Parts Master List book for Austin 1800  
BMC & Leyland B series Engine Data - Lindsey Porter (Osprey press)  
Haynes Zenith CD Stromberg carburettors manual

All the above in excellent condition, make an offer!

### BITS FOR SALE

Complete Hydrolastic interconnection pipes for Austin 1800 Ute.

Plus range of Brand New Mini bits and pieces still in boxes including:

Oil filters - cartridge and spin on  
2 x rear trailing arm repair kits (includes shafts and bearings)  
Cooper S CV joints and boots  
set of 1.5 ratio high lift rockers  
braided brake hose & clutch hose set  
+ other bits & pieces

also some used mini and Cooper S stuff including:

Clubman doors  
gearboxes and diffs  
carburettors

Ring and make an offer

Full list of mini parts can be faxed on request

Howard [02] 9519 3110

# FOR SALE...

Mk 11 1968 No reg or RWC Vikki Buccannon Dirty green/ Camel Kew [03] 9817 3254  
\$1000

Mk 11 1800 1969 man. 68,500 olive green/ green tinted windows new cv joints \$3,500  
S Taplin Bangor NSW. [02]] 9543 6581 or 015 07 4791

Mk 11 **Ute** Fully retrimmed, two pack bare metal respray in British Racing Green, with white  
roof and black bonnett, twin carbies and extractors Detailed engine bay including alloy  
rocker cover Club member Paul Nicholls **\$6,000** Monbulk Vic [03] 9752 1489

Mk 11 1800 Auto Lady owner light blue **57,000 miles** Bondi Junction Jan 98 reg.Club  
member Norm Peck [ 02] 9622 0791 has inspected the car

**A 90 Westminster** 1955 6 pot engine which is also found in Austin Healey 100/6 beige paint  
interior very good with red upholstery good body Allan Hogg [02] 9522 5184 **\$1,500**

**Twins** 1/ Mk 11 1800 White Good body and interior- engine not so good. 2/ Good engine  
slightly ratty interior neither registered Phyllis Unsworth [03] 5439 5854 Mandurang  
South near Bendigo Vic

Mk 11 Kimberely manual with a gearbox problem reg till 3/98 no RWC \$3,000 John  
Blackwell Q.L.D. 3395 3538

Mk 1 1800 Man **Lynx head** new hydrolastic suspension reconditioned brakes Cedar  
green **\$2,000** Marg Withers [047] 774 615 Penrith N.S.W.

Mk 11 1800 Reg till March 1998 Manual or Auto VGC \$1700 QLD 0755 463 125 Hilary  
Jepson

Austin 3 Litre [ 1800 centre section & longer boot and bonnett ] VGC QLD 07 3399 3579  
**\$6,000**

Offer to **swap** Wolseley 18/ 85 Mk 11 auto [ with recent overhaul of power steering] for Mk  
11 Kimberely with cash adjustment as appropriate Garry Fry [02] 9130 6591 Or  
Mobile 0414 992 386

**Morris J2** Camper Van photos and a page of details with editor \$800 or so Brian King  
Seaford Vic [03] 782 3065

**Merry Christmas to all !**