THE SNAKESKIN

Cobra Club of WA Inc

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Page 1

"COBRA TOPS THE LIST"

Car of the Century – In the Motoring Liftout section of the West Australian dated Saturday 13 June 1998, listing the top 100 cars of the century, you may have noticed the car at the head of that illustrious list – Yes!! It was our beloved **AC Cobra 427**. Although the list was in alphabetical order I don't think that had anything to do with it – It should be at the top!!

The AC Cobra 427 is the most replicated motor vehicle in history and I wonder if in years to come we will be able to buy kits for such cars at the Renault R16, Fiat 500 Topolino or the Saab 96 (no offence to those proud car owners), but I seriously doubt it.

Another sad thing about the list is obviously, not one of the judges or selectors have ever been to Australia to see some of our cars such as the **XU1, SLR 5000 L34, Monaros**, the full range of **GT Fords**, the **Valiant Chargers** and even the **old FJ Holden** should have got a mention. There are a number of cars on the list that should be there, but on the other hand there are a number of those that certainly don't belong there – or perhaps it's my taste in motor cars!!

One surprising fact I found from the article, was that, the most popular vehicles ever sold, were the Ford F series pickups with over 26 million sales.

The decision as to the car of the century is still 18 months away, and generally in these sorts of competitions, the winner will surprise us all and be picked for some obscure reason that will leave us wondering for the next century – **WHY??!!**

Harry Mac
Editor

INFORMATION STORAGE

When starting research for the building of a car, a tip is to save everything you can get your hands on in the way of pamphlets, magazines, brochures, advertisements etc – anything you find of interest.

Car shows are an excellent venue for collecting such items. For instance you may notice the way the upholstery on one car is exceptional or different and you would like to keep that in mind for when your time comes, so acquire a pamphlet or card and make a note on it as to what caught your attention, or it could be the paint job or the engine detailing or even a stall that has a nice product that you may want to use in the future. Don't rely on your memory – get some details and save them.

Saving is one thing, saving where you can find it again is yet another – so often we throw it in a drawer or on a pile of papers never to be seen again – the same with magazine articles, photos and advertisements. It take ages to go through all the magazines page by page to a frustrating end of possibly having lost it or thrown it away.

An effective way to overcome such disasters is to store everything in clear sleeve plastic files. I started mine on Cobra's years ago and to date have 5 of them on the shelf at the ready.

No.1 holds all Cobra pictures and articles from magazines that appealed to me.

No.2 is all pamphlets and brochures that I found may be of use when I am ready for it.

No.3 is Technical articles from magazines, such as cooling, suspension, chassis, brakes etc. Also pages of "tech tips" little tips you find that offer handy and helpful solutions to problems you encounter when playing with motor cars.

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QUOTE FOR THE MONTH : "Start by doing what's necessary, then what's possible and suddenly you are doing the impossible." - St . Francis of Assisi.

Information Storage ... continued

No.4 is a collection of "nudie" pictures and pin-ups I would like to pin up in the garage if I had permission from – "she who must be obeyed" - but you don't want to know about them.

No.5 is a record of all receipts for everything I have purchased for my project as proof of ownership, along with an itemized list of receipts – so as to keep a total costing on the project as I go. This "tally list" is stored for safe keeping in the middle of file No.4 because (she who must be obeyed) has no interest in my No.4 file.

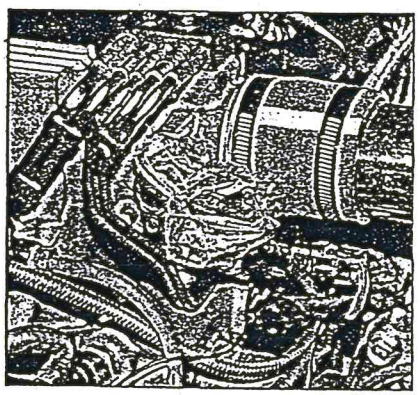
When saving articles from magazines, always check what is on the other side of the page before you start cutting – if you don't wish to cut up your magazines, you can always photocopy them for your file. This way of saving puts everything at easy reach – I hope this is of assistance.

Harry Mac

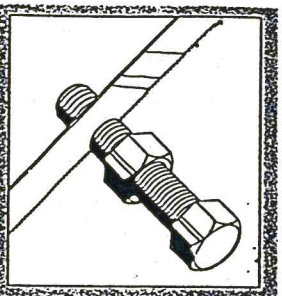
TIP TIME

TPS SHOWER CAP

Throttle position switches (TPS) are very sensitive to water. If you are going to wash off your donor engine, wrap a plastic bag or other cover around the TPS to protect it from moisture. If you experience rough running immediately after washing your engine, the TPS has probably been damaged by water. Drying it out rarely helps, so you'll probably have to replace it.



HACKED OFF



Using a bolt that is too long is unsightly and potentially dangerous because it is easily broken if something strikes the protruding end. However, before cutting off the end, thread on the nut. Then once the end is cut off, remove the nut, helping to recut the threads.

DISPLACEMENT

To calculate engine displacement, all one needs to know are the bore, stroke, number of cylinders, and the constant .7854. Plug those values into the following equation:

Displacement = .7854 x bore x stroke x number of cylinders

For example, a Ford 351 engine has 4.00-inch bore and 3.50-inch stroke and eight cylinders.

$.7854 \times 4.00^2 \times 3.50 \times 8 = 351$ cubic inches

If the cylinders were bored .030 it would read as follows:

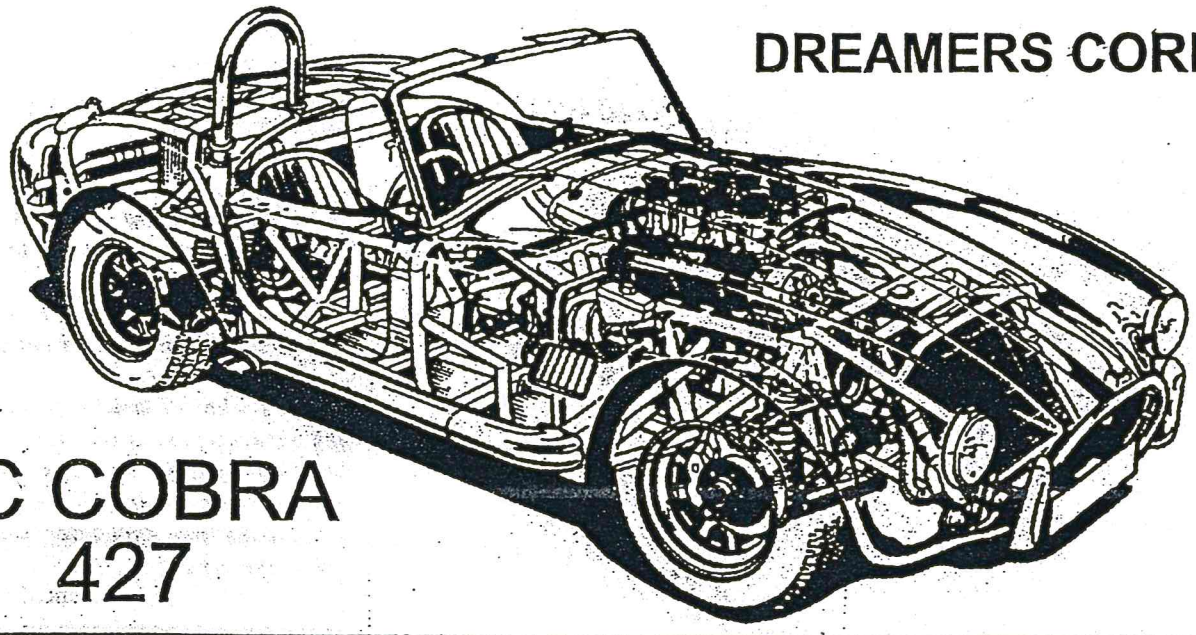
$.7854 \times 4.03^2 \times 3.50 \times 8 = 357$ cubic inches

To convert cubic inches into cubic centimeters, multiply inches by 16.6.

For example,

302ci x 16.6 = 5013.2 cubic centimeters or 5.0 liters.

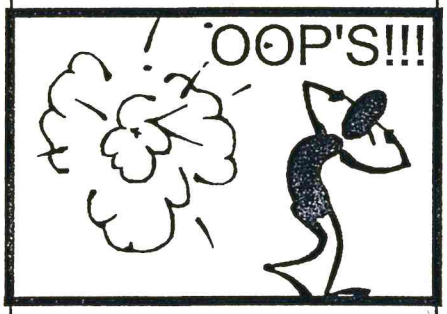
DREAMERS CORNER



AC COBRA 427

Some original specifications for the purist.

Type	AC 'Cobra'/Shelby Cobra/Ford Cobra
Built	Thames Ditton, England and Sante Fe, California (approx first thirty cars) then Venice, California.
Engine	Ford cast iron V8. *260cid (4260cc),* 96.5 x 73mm, 260 bhp at 5800rpm, 269lb ft torque at 4800 rpm. *289cid (4727cc):* 101.6 x 72.8mm, 271bhp at 5800rpm, 269lb ft torque at 4800. *427cid (6998cc):* 107.6 x 96mm, 425bhp at 6000rpm, 480lb ft torque at 3700rpm. *428cid (7013cc):* 104.9 x 101mm, 355bhp at 5200rpm, 390lb ft torque at 3700rpm.
Transmission	Ford. *260:* first 2.36/1, second 1.78/1, third 1.41/1, fourth 1/1, final drive 3.54/1. *289:* first 2.36/1, second 1.61/1, third 1.2/1, fourth 1/1, final drive 4.56/1. 427/428: first 2.32/1, second 1.69/1, third 1/29/1, fourth 1/1, final drive 3.54/1 (427) or 3.31/1 (428). Single plate dry clutch, all models – 10.5in (289)/11.5in (427 & 428). Approximately 30 289 Cobras were built with automatic transmission.
Wheelbase	All models 90 inches
Track (front)	53.25in (260 & 289)/56in (427 & 428)
Track (rear)	52.5in (260 & 289)/56in (427 & 428)
Length	151.5 in (260 & 289)/156in (427 & 428)
Width	61in (260 & 289)/68in (427 & 428)
Height	To top of screen: 45in (260 & 289)/49in (427 & 428)
Weight	2020lb (260), 2100lb (289), 2150lb (427), 2529lb (428)
Suspension	*260 & 289:* Independent, by two transverse leaf springs fixed on central chassis turrets. Leaf springs form upper link to king pins, lower link by A-arm. Telescopic dampers. *427 & 428:* Independent, by coil springs, coaxial dampers and double wishbones. Trailing arms to locate rear wishbones
Steering	Worm and sector (first 100 to 120 cars), then rack and pinion. 3 turns lock-to-lock for rack and pinion. $1\frac{2}{3}$ worm and sector
Rear axle	Centrally mounted Salisbury hypoid differential unit, with PowrLok limited slip. Open halfshaft to rear hubs, each with two universal joints and a sliding spline
Brakes	Hydraulic. Four wheel discs. Most common size $11\frac{5}{8}$in front, $10\frac{3}{4}$in rear
Chassis	Two large diameter steel tubes jointed ladder-fashion form backbone. Turrets fore and aft carry suspension and differential unit. Cage of smaller diameter steel tubes strengthen main chassis and support bodywork and bulkheads. Substantial detail improvement and strengthening of chassis, including larger diameter main tubes, for coil spring models, although basic structure unchanged
Body	Hand-formed 18 gauge alloy sheets, supported by lattice of small diameter steel tubes
Wheels & tyres	Wire wheels 6J x 15 on knock-off hubs, tyres 6.50/6.70 x 15 (260) 7.35 x 15 crossply or 185 x 15 radial (289). Halibrand alloy 7.5J x 15 on knock-off peg-drive hubs, tyres 8.15 x 15 crossply or 205 x 15 radials (427 & 428)
Electrical system	Dynamo (most 289s), alternator (427/428). 12 volt. Ignition by coil and distributor
Performance	*260:* 136mph, 0-60 5.2 secs, quarter mile 13.8 secs, 18mpg (Imp). *289:* 138mph, 0-60 5.5 secs, quarter mile 13.9 secs, 17mpg (Imp.) *427:* 145mph, 0-60 4.2 secs, quarter mile 12.4 secs, 12mpg (Imp). *428:* 140mph, 0.60 5.9secs, quarter mile 14.9 secs, 12mpg



FOR SALE

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Ford 302C Complete
Ford 351C Short & Clutch
Std Bore??
Toyota 5 Speed Gearbox.

Dave Tadic
Ph. 94547064

Ford 351W
Assorted Parts
Chrome Rims Steel 15"x7"x2
Jag Rear Springs x 4
Spax Shocks Fr. / Rear .x 2
Koni Shocks & Springs x 2
Monroe Gas Shocks x 4
Yokohama 352. 50%
295 x 15 x 50 Series.

Peter Coleman
Ph. 93373255

Ford 460, with bellhousing to suit Toploader. Full recon, never started. Harry Prince.
93534959

PRESIDENTS PATCH

The COBRA Club of WA is now 12 months old and in those first 12 months we have been feeling our way amongst our peers with two public showings, All Ford Day and Marlows Classic Car Show, and participation by various members at other Car Club activities, (Social & Competitive).

We have of coarse organised various social events within the club with a mixed bag of attendance.

I'm confident that during our next 12 months Club members will become more involved within the club and assist the newly elected committee.

On behalf of the outgoing committee and office bearers, I would like to thank all Club members for their support and assistance over the past12 months.

Regards,
GRAHAM SACH.

Leaded vs Unleaded

Article, courtesy of MF Microlight Flying, (believed to have originated in Australia).

By R D Greenway

With engines with non-alloy heads, all that unleaded fuel requires is hardened valve seats. But all engines built before unleaded fuel came into vogue and/or those which do not sport dry catalytic converters produce exhaust fumes which are unbelievably poisonous.

Firstly, let us talk about the lead in petrol, which is put in there to enable us to achieve a higher octane rating and thus get more efficient engines. When lead is burned in an engine, it is subjected to temperatures around the 2,000-3,000° C mark, so it is actually baked like a house brick. When the particles are emitted with the exhaust gases, they fall to the ground within 10-12ft.

Those baked particles have been tested and it has been found that neither various acids nor stomach acid has any dissolving action on them. Neither can they be absorbed into the human lungs, unlike lead dust. But lead does not get emitted by engine exhausts. From the graphed statistics recorded between 1933 and 1985, one sees a steady decline in the lead levels in human bloodstreams, yet lead began to be added to petrol in 1925 and peaked in 1970. One would have expected blood to show rising amounts of lead in proportion, but the graphs do not so much as a hiccup.

When Germany reduced the lead in their petrol, again no reductions were observed in human blood samples taken. Tests were even done on a remote island off the coast of Scotland - where there is not a single combustion engine - and, surprisingly, the levels of lead found in the population were much bigger than from people in the centre of London!

Much the same results were experienced when comparisons were made between New Guinea and Melbourne, Australia. The actual decreases in lead levels have been traced to the reduced use of pewter, a decrease in lead solder used in food cans and replacement of lead water pipes with copper or plastic.

Lead was taken out of petrol for one reason only: the dry catalytic converters became clogged very quickly with lead particles and they stopped working. Unfortunately, the green movement (badly informed in those days), enthusiastically latched on to the lead removal and - completely ignored the real reason for its removal - mounted an emotional campaign, with the results which we still suffer today.

Unleaded petrol is a different kettle of fish and is much more dangerous, as I will proceed to show.

More than half a litre of every gallon of unleaded petrol is a brew of aromatics and, if witches had filled this particular cauldron, it could not have been made more evil.

The aromatics which replace lead are dimethyl-benzene, mesitylene, toluenes, xylene and benzene. Every single one of these is a declared carcinogen and will cause cancer-related disease and leukaemia. Note that I have said 'will' not 'might'. Allow me to quote from a government adviser at the time. He warned about the horrendous dangers of unleaded fuels but was ignored. He stated:

'In fact, this stuff appears to be so dangerous, potentially lethal, that I urge you not to use it in any car not fitted with a catalytic converter. Don't use it in you mower, chainsaw, whipper snipper (trimmer) or outboard engine. Do not wash parts in it or allow it to make

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Leaded vs Unleaded

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contact with the skin. Avoid fumes when refuelling and don't allow anyone near the exhaust, particularly when the system is cold. Catalytic converters do not work until they reach 400°...'

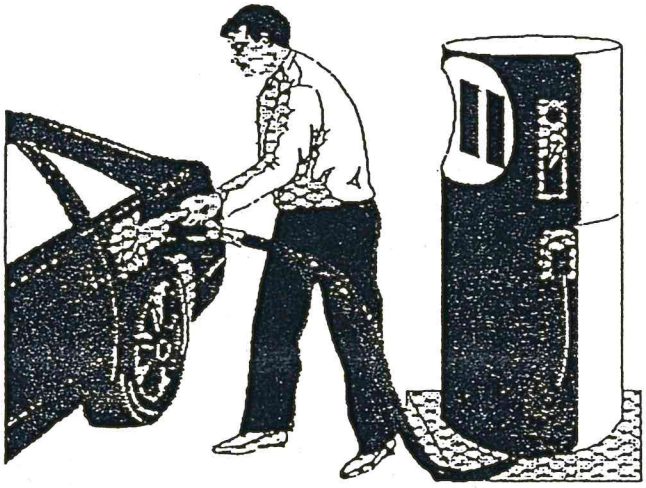
Professor Morando Soffritti of the Institute of Oncology at Bologna found that exposure to certain fuel additives such as benzene, toluene and xylene causes cancer tumours when ingested or inhaled. In particular, benzene was named as a powerful carcinogenic which acts on many tissues and organs. The data leaves no room for doubt that additives are thoroughgoing highly potent carcinogens.

Roger Perry, a professor of environmental control at London's Imperial College, has conducted tests which show that unleaded petrol, when used in cars without catalytic converters, produces a great quantity of volatile organic compounds which can be directly linked to cancer. Recently in Britain, the National Society for Clean Air has removed all support for unleaded petrol.

It now turns out, from information from America, that the average car fitted with anti-pollution gear only stays clean for approximately one year. After that, the gear deteriorates rapidly unless completely renewed. Even a single back-fire whilst a mechanic turns a car will completely destroy a converter. The life span of any converter is approximately 3,100 miles after which it needs replacing.

Acid Rain Pollution

This comes from two sources; one is sulphur dioxide, the gas from coal-fired power stations, the other is hydrogen sulphide. The latter 'bad eggs' smell comes from unleaded petrol fuelled vehicles. As the Germans began the removal of lead from petrol, it is only right that they should be the first ones to suffer!



In Germany, acid rain has been around for some time but since the introduction of unleaded petrol, it has reached the stage where the top half of the famous Black Forest is now dead and brown.

The authorities in Australia have used every trick imaginable to support unleaded petrol, even to doctoring graphs and charts. The graph recording the lead in human blood, which has been showing a steady decline since the 1980's was carefully altered to show a four year period from 1976 to 1980. So, naturally, it showed a decline and - when the chart for the amount of lead used in petrol was overlaid - it looked as though the reason was the reduction in lead! That is a real misuse of figures.

Think of the pump attendant, the motorist, the motorist selfserving him/herself, all breathing in those deadly vapours. What about the tanker driver; he must get the largest dose of all. He could make a huge compen-sation claim but is that worth the pain and suffering which leads to it?.

This, is not foolish scaremongering; in Sweden, they have already found unexpectedly high levels of leukaemia in petrol station workers. So what do we do? Firstly, fill your own two-stroke container with leaded petrol and add the two-stroke oil. Service stations (in Australia) have been caught using unleaded petrol in their take-away two-stroke containers. So when you fill your outboard, you mower or whatever, just be sure to use leaded petrol; it is a heck of a lot safer.

And if you fill your catalyst-filled car with unleaded petrol, be sure you stay upwind of the fumes, do not breathe it in or allow splashes on your skin. Also, do not drive an unleaded petrol car on short journeys, where the catalytic converter does not get time to heat up to its working temperature.✪

A very thought provoking article from Ron Meechin, thanks Ron.

Ford

The advantages (in addition to those above) of Ford V8's are :-

- Highly authentic.
- Availability of 'real' cobra parts such as valve covers and sumps.

The disadvantages of Ford V8's are :-

- Not built by Chevrolet.

Here is a list of what is available:

- 221 cu. No reason to use this.
- 260 cu. Fitted to some early cobras, better to choose the 289...
- 289 cu. This is the most common and successful cobra engine.

  Don Mathieson from NZ runs one of these in his ALMAC Cobra. He rebuilt it and uprated the valvetrain, inlet manifold and carburetor. In this mild state of tune he gets 250 hp at 5000 rpm measured at the wheels.
- 302 cu. Larger version of the 289, except the rare "boss" 302 which is a completely different block. Check out late model Mustangs that use this engine, with EFI and 5 speed manual transmisson.
- 351 cu. Two types available according to which plant they come from. Cleveland or Windsor.

  The 351W (Windsor) is a long stroke version of the 302 and is interchangeable with it. The 351C (Cleveland) is a completely different block. It is physically bigger and preferred for performance applications.
- 352 cu. First of the big blocks and first of a family of engines known by their factory nomenclature: "FE". All of the FE engines are interchangeable (you will find more in the list that follows) and all have the letters FE cast into the block.
- 360 cu. A member of the FE series (see above).
- 390 cu. A member of the FE series (see above).
- 427 cu. Two types are available.

  The common one is yet another member of the FE series. The other type is the rare and desirable "side oiler" 427, a completely different engine built with performance in mind and fitted to the original 427 Cobras. There is also a monstrous SOHC version, see exotica section below.
- 428 cu. Largest of the FE series.
- 429 cu. Two types are available.

  The common one is the first member of another series (not an FE) of what are basically truck engines. The other type is the extremely rare and desirable "boss" 429, a completely different engine built with performance in mind and fitted to a few rather quick Mustangs.
- 460 cu. Larger version of, and interchangeable with, the 429 "truck" engine.

Choosing an engine for your Cobra

One of the first decisions that a cobra builder must make is to decide what engine to use. The choices are varied and revolve around the following issues :-

- How authentic do I want the car to be ?
- How much will I use the car ?
- How much money do I have ?
- How fast do I want to go ?

American V8 Engines

Generally speaking these lovely beasts fall into two groups: small and large (not getting too technical I hope !). Small block V8s range from (approx) 220 to 350 cubic inches and big block V8's range from 390 to 460 cubic inches (for europeople: there are approximately 60 cubic inches in a litre). There is some overlap (the biggest Chevrolet smallblock is 400 cubic inches) and also 'specials' available from the aftermarket that go right up to 600 cubic inch monsters.

Most where developed in the late 1950's and have changed little since, the power outputs specified by the manufacturers are wildly optimistic, actual output is probably about 70% of the claimed figure. When buying one for your Cobra avoid anything from after the mid 1970's since this is when power robbing anti-smog modifications were made.

Features of the American small block V8

- Authentic
- Widely available.
- Cheap to buy, rebuild and tune.
- Strong, reliable and simple to work on.
- Lovely noise and enough torque to pull down small buildings
- Well served by the aftermarket.
- Can be *reasonably* economical.
- Not too difficult (or expensive) to achieve 1 horsepower per cubic inch capacity.

Features of the American big block V8

- Authentic
- Cheap to buy, rebuild and tune, but generally more expensive than smallblocks.
- Very strong, reliable and simple to work on.
- Huge noise and enough torque to pull down large civic buildings.
- Well served by the aftermarket.
- Fuel economy is not a strong point (who cares ?).
- Not too difficult (or expensive) to achieve 1 horsepower per cubic inch capacity.
- Needs **strong** drivetrain components.