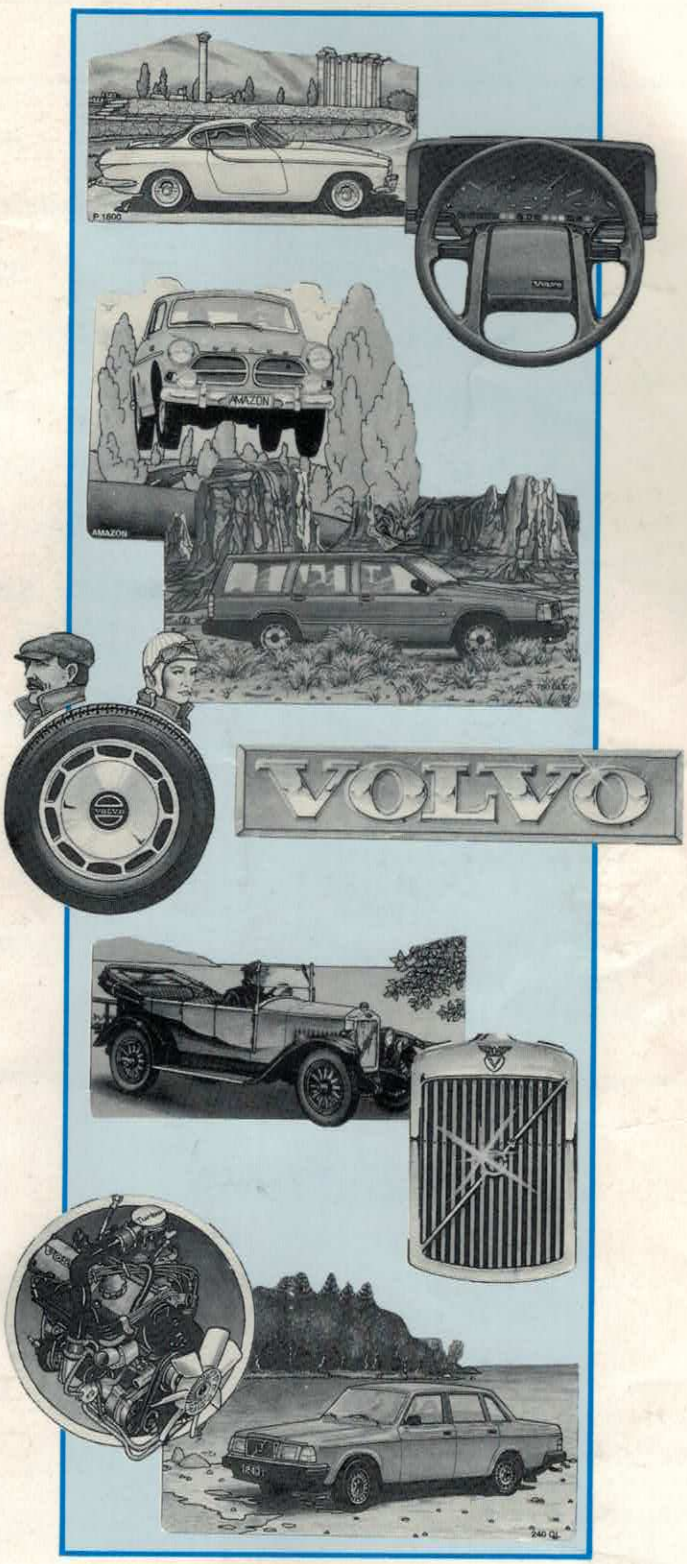
CLUB VOLVO VICTORIA



BULLETIN

COMMITTEE MEMBERS FOR 1990/91

PRESIDENT	John Law	882 4887
VICE PRESIDENT	Philip Perkins	874 7543
SECRETARY	Lance Phillips	707 2724
ASSISTANT SECRETARY	Rod Patton	(059) 56 8513
TREASURER	John Paton	596 5787
MEMBERSHIP OFFICER	Ted Brotchie	489 4884
EVENTS CO-ORDINATOR	Garry Bellairs	819 7208
TECH/EQUIP CO-ORD.	Andrew East	391 5706
MAGAZINE EDITOR	Bill Klammer	465 9626
CLASSIC REGISTER	Philip Perkins	874 7543
COMMITTEE MEMBERS	John Curtain	792 3094
	John Harding	846 2378
	Dennis Rodrequez	898 8851
	Len Ward	707 1043

DISCLAIMER The opinions expressed in this magazine are not necessarily those of the committee of management.

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CALENDER OF EVENTS

WEDNESDAY 5th December Twilight Meeting	"VOLVO AUSTRALIA" A combined visit to see videos, new models & trophy presentation from Wattle Park. Several door prizes	Time: 6.30PM Railway Rd, BLACKBURN Supper & drinks provided. Levy $5.00 per adult (to club funds)

NB. For catering purposes, numbers must be known therefore RSVP by 28th November on 8197208 or 7072724

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SUNDAY 9th December	Christmas Party Old Cheese Factory & Gallery. (Small wrapped gift for children from Santa)	Time: 11AM in Main St, Berwick BBQ facilities BYO food & drink (Melways 131A2) if a bit late.

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COMING EVENTS IN 1991:

Feb 6th	Night Meeting	Camberwell Theatrette
Feb 24th	Club Run Badgers Creek	Meet at Eastland at 10AM. BYO all.
March 7th	Special Night Meeting "Engine Reconditioning"	Details in next Bulletin
March 17th	Classic Run to Elaine "Cavalcade of Cars"	""

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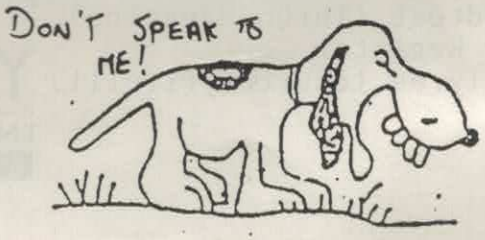

MONDAY

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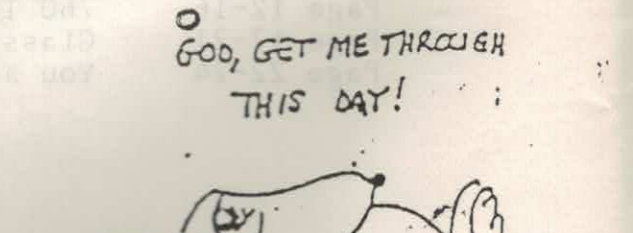


TUESDAY

PRESIDENT'S REPORT

As I have indicated in previous President's Reports, the Club reached new heights over the past 12 months or so and the Committee is anxious to maintain these newly achieved standards. One aspect that we think requires immediate attention is the Club's Bulletin. To many of our members, the Bulletin is their only club contact whilst those outside the Club will form opinions and have their percept-ions shaped by our journal. It is vital, therefore, that our magazine be the very best our resources permit. Early 1991 should see a new look Volvo Club Bulletin arriving in your mailbox.

I would like to compliment Paul Frisk on the Tune-up Day held at his workshop on October 13th. Many club members have experienced Paul's expertise for some time and his knowledge of things Volvo was appreciated by the band of amateur mechanics who peered apprehensively under the bonnets of various off song Volvos. All vehicles left in considerably better shape then when they arrived. My 122S of course, left it until that day to reveal a thundering great hole in the exhaust. As usual, the car got its way and it's now sporting a brand new exhaust system from the manifold back. I know cars are supposed to be inanimate mechanical objects but sometimes I really wonder. Perhaps some forest sprite got into mine sometime in its manufact-ure. I am dertimed to prevail!!.

Finally, the display day at Wattle Park. Lots of Volvos; (ALL models),lots of sunshine,lots of fun, lots of interested spectactors. Lets hope it all happens.

Safe Driving

John Law

SECRETARY'S REPORT:

As another calender year draws to a close it maybe time to reflect on the what the Club achieved during the year.

Membership topped 160 for the first time and attendances in general were up for most meetings.

The committee gained some new faces to help the running of the Club for the next year.

We also had some entertaining guest speakers and great club runs.

The support from Volvo Australia, the dealers and other sponsors was certainly appreciated as this benefits the members as well as the club in general.

On a negative note, a federal minister was suggesting all old cars should be put off the road and increased charges for leaded fuel. I wonder if the minister concerned was considering selling her 12 year old leaded car!!! It makes one wonder at the wisdom of some of our "leaders" at times when such rash statements are made without thinking of the ramifications.

On a brighter note, Volvo Australia turned 20 but the Volvo Club of Victoria came of age as we turned 18.

Lance Phillips

NIGHT MEETING: October 1990

Some members travel a fair distance to attend night meetings and day events. Typical of these is Robert and Shirley Kaub of Ocean Grove and Rod Patton of Phillip Island. These members make it on a regular basis while other country members make it when time permits.
But for this meeting the record must go to new member David Jacobson who left Darwin earlier that morning to be back in time for the evening meeting - well done David. David did some high flying at the controls of a jet and completed the trip in the 760 Turbo.

Unfortunately the meeting did not go to original plan as our guest speaker, Andre Rosenberg was committed to a prior engagement so the talk on LPG conversions and safety will have to wait until early 1991.
A compilation tape of Volvos in action was substituted to entertain the members on this occasion prior to supper and general discussions.

****

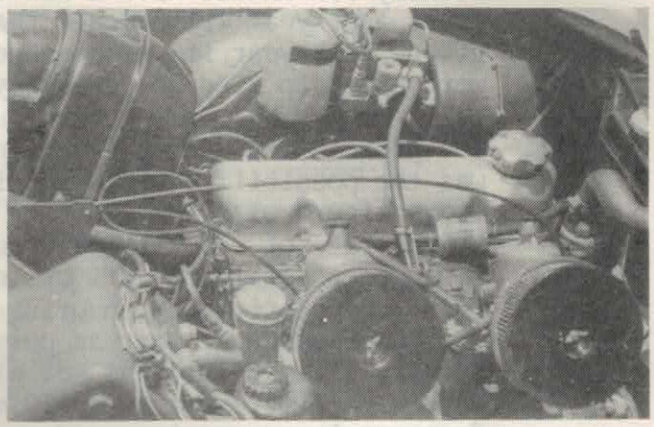
CLUB RUN TO THE SNOW: -19th August.

Only 4 cars left the Eastland carpark and headed to Lake Mountain for a day at the snow.
As we approached the first carpark on the mountain, a sign read -"Top car park full, park here 5km from the top".
As three Volvos contained small children we were most unimpressed. However, on nearing the car park no one stopped us so we kept driving- to the top.
We all found parking although a bit scattered.
Eric Ullner joined us for a short time and John Paton was spotted in the snow. both has arrived earlier to enjoy some cross country skiing.
The East and Bellairs boys were eager to get into the snow and so we hurried off after lunch.
Sorry we missed the Witherby's from this point and the Brotchies weren't sighted either after heading for some lunch. Hope they had a great time like we did. Thanks to the Bellairs for their spade to help make our snowman complete with traditional carrot nose and pipe. The tobaggoning was great fun, the waether was terrific and there was a lot of beautiful snow- a great day was had by all. (Rod and Karen Patton and family from Phillip Island also missed seeing everyone else but had a great time.)

The Volvo 740 Turbo Estate: at home in the snow

Doryea East.

TUNE UP DAY - October 13th.



The October tune up day fell on the 13th but not a Friday but it had a similar effect. Melbourne was well into petrol rationing on an odds and evens $20.00 limit. This probably accounted for a restricted turnout to this session. Only 9 cars fronted but several new members gained the benefit of Paul's expertise and guidance resulting in a smoother running car.

Overall the day was highly successful from the point of view of those attending and our thanks to Paul and his team for their efforts.

****

ANNUAL ECONOMY RUN - GUMBUYA PARK.

This year, by way of a change it was decided that the annual club economy run should have a new twist. Those who participated in the event last year will recall that cryptic navigation clues were given, this year it was a scavenger hunt in which participants were asked to find 20 "everyday" items.

The principle aim of the scavenger hunt, apart from added enjoyment was the possibility of increasing your vehicles kilometre per litre figure with the addition of bonus points which were awarded at the rate of .25 kilometre per item scavenged. In this way it would be possible for drivers of heavier Volvos with larger engines to be competitive, by ensuring that they collected as many items from the scavenger list as possible.
Equally a time limit was set with a suitable reduction in kilometres per litre for every 10 minutes over the 2 hour limit- fortunately no-one incurred any time penalties during the event for excessively slow driving.

Sunday dawned clear and warm and a handful of participants dutifully topped up their petrol tanks at the Mobil station in Tooronga and awaited instructions.

As Events Director I found it hard to comprehend the looks of dismay and bewilderment that spread across the faces of the participants as they read the list of items to be collected. There was much searching in boots and gloveboxes with the more serious like Andrew East who immediately headed for the service station kiosk to purchase/acquire certain items, notably 2 Ford Falcon hubcaps and a can of pet food, in the process also obtaining a $1 coin of the required mint year.

Not to be outdone by her husband's scavenging ability, Doryea East tried desparately to create her own artistic version of the required Safeway bag- but failed to impress the judge.

continued,

ECONOMY RUN contd;

In due course all 5 participants departed to navigate their way over the 86 kilometre course which saw them arrive in NarNar Goon on the Princes Highway just under 2 hours later where we met up with Lance Phillips,Rod Patton and new members David and Patty Jacobson.

After tanks were once again topped up and scavenged items counted the now larger group of 9 vehicles proceeded to Gumbuya Park at Tynong.

The facilities in the park were first class with the reserved shelter and BBQ being excellant if a little difficult to locate initially.

With lunch over members, wives and children set out to enjoy the rides offered by the park and to browse through the Craft Market and other exhibits.

My boys, Scott and Matthew along with Craigand Ashley Phillips unanimously voted the 4 wheel motorcycles and the down hill toboggan run as the highlights of the day.

Everyone who participated enjoyed themselves which as Events Director is gratifying, however, what is disappointing is that with perfect weather and a good venue so few members chose to participate. It is demoralising as each of the events which are organised for the benefit of Club members involves time on part of the committee to arrange, time to write instructions, time to have them typed and copied, time spent on the telephone arranging venues, guest speakers or sponsors. In short each event that is organised probably consumes the best part of 20 man hours to provide you with an enjoyable day- ALL WE ASK IS THAT YOU MAKE THE EFFORT TO ENJOY IT!!!!

Gary Bellairs.

(The last comments are reiterated by the committee.)

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ECONOMY RUN RESULTS

NOTE Bonus points of .25 kilometre/litre have been awarded for each item collected from the scavenger hunt list.

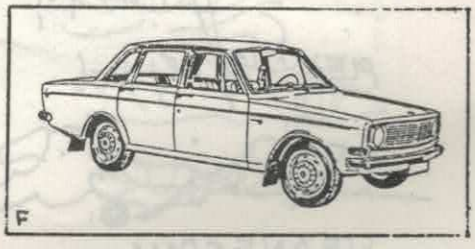
1st Place: Eric & Elizabeth Ullner ---Volvo 142DL
15.5 km/l or 43.784 mpg --Actual
* with bonus points
18.25km/l or 52.058 mpg

2nd Place: Andrew & Doryea East ---Volvo 244GLE
11.39km/l or 32.174 mpg --Actual
* with bonus points
15.64km/l or 44.613mpg

3rd Place John & Judy Paton --- Volvo P1800
12.30 km/l or 34.745 mpg --Actual
* with bonus points
15.30 km/l or 43.463 mpg

4th Place Douglas Ramsay --- Volvo 244GL
10.05 km/l or 28.389 mpg --Actual
* with bonus points
11.555 km /l or 32.946 mpg

5th Place
Peter Digby 164E
7.43km/l or 20.988mpg
* with bonus points
9.18km/l or 26.186 mpg



CLASSIFIEDS

LPG CONVERSIONS: Volvo EFI from $1380

ROSENBERG AUTOMOTIVE, Healesville
Phone Andre 059 623619

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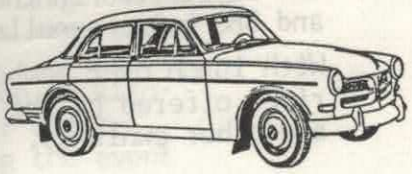
CAR TRADER



1974 142DL 4 speed, ph.053 312971 and ask for David

1970 142GL 4 speed, mustard, $2000 , phone John 058 734573

#*#*#*

1968 1800S, red, RWC, $13,000
Phone; Jason 3297577 BH or 8266783 AH

1969 122S, Red with cream upholstery, B20, 2Door, RWC
$8,000; Phone Tony 4814721

1961 122S, 4DR, unreg, B18 column change, new windscreen, suit restoration, $700 ono, Phone Richard 3673339 AH

1962 122S, red, 4 door with spares. ph Greg 056 822442

1961 122S, 4 dr, B20, 5 speed (celica) Paul 367 1849 BH

1965 122S, 2 DR , white with red interior, RWC,
PH Graham 606 3011 BH or 059 443400 AH

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FOR SALE: Brochures and catalogues and various Volvo bulletins

Large range ,various prices

Contact: Lam Van Beek; 050 242763 or FAX 050 243395
(I also have the list, if anyone interested, Lance)

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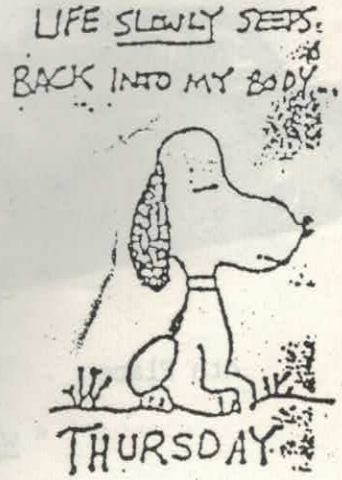
NEW CITY DEALER

Reg Hunt Volvo have been appointed the official city agent.



PROGRESSIVE CLUB POINTSCORES:

Committee:

L. Phillips	242GT/122S	51
A. East	242GT/244GLE	45
J. Law	244GL/122S	39
G. Bellairs	244GL/145E	36
J. Paton	P1800/240GL	33

OPEN LIST:

R. Patton	144GL/1800E	36
E. Ullner	142DL/164E	30
P. Digby	164E	24
L. Ward	122S/262C/142DL	24
T. Hughes	245DL	21
B. Miller	144DL	21
D. Rodrequez	264GL	21
M. Wahner	264GL	21
G. Coates	245GL	21
R. Gilmore	240GL	18
P. Harvey	245GL	18
J. Reaper	245DL	18
P. Hoffmann	244DL	15
N. Morley	1800ES/240GL	15
P. Perkins	121	15

Points are awarded for attendance,and competition events are added at the end of the year for a final figure.

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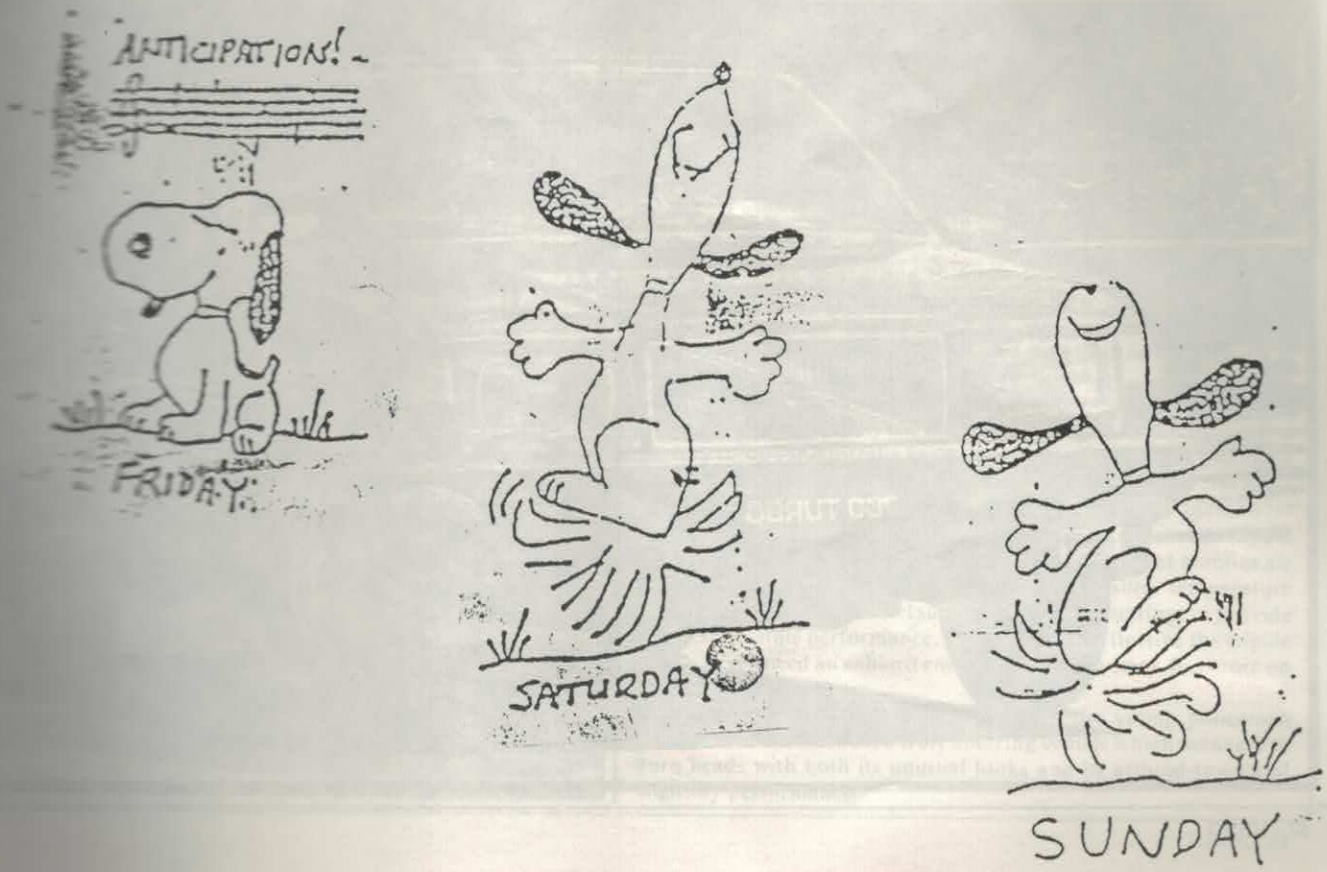
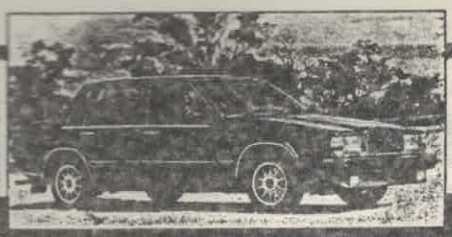
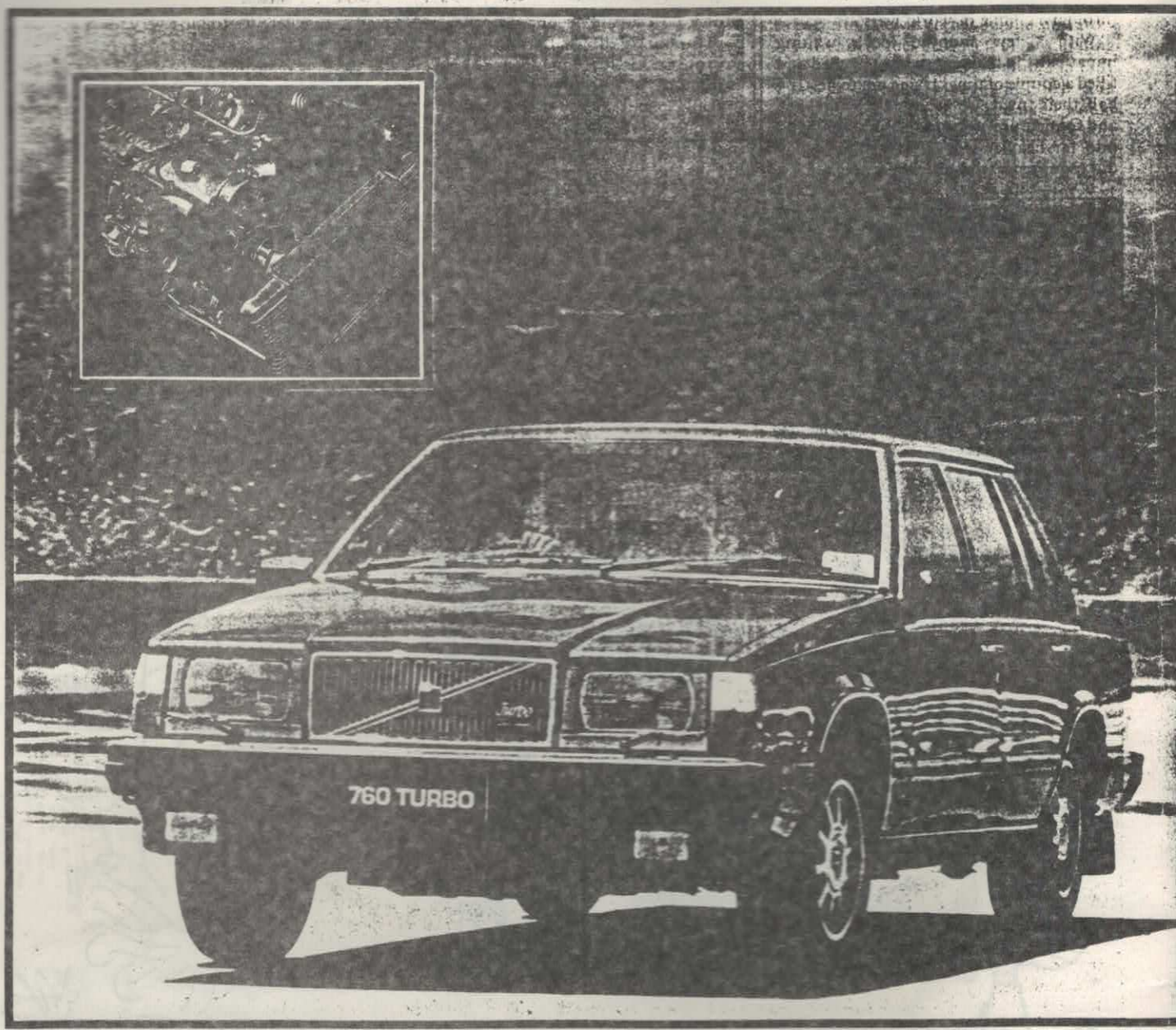




VOLVO 760 TURBO

THE BEST FACTORY



Technically Advanced, Luxuriously Appointed, and Excitingly Quick.

JOB YET...

THE young officer reluctantly removed himself from the comfort of his highway pursuit car. Life on the Hume was fairly monotonous, especially at 8 am and especially before breakfast.

However, the shiny new vehicle he had pulled up quickly caught his eye as he began marking down its particulars.

"What the hell is this called?", he casually inquired.

The unnerved motoring scribe who had become the latest victim of the infamous NSW radar gun and was still pondering the consequences of yet another hefty speeding fine, managed to mumble:

"A Volvo officer."

"It certainly doesn't go like a Volvo," the man in blue announced.

"Doesn't it?" the cautious scribe replied.

"No — and what's more, it sure as hell doesn't look like a Volvo," the lawman concluded.

With these words, the officer's attitude slowly began to change as curiousity took its toll and he stopped writing the ticket, removed his dark glasses and began taking a closer look at this funny looking, super-quick Volvo that had just provided him with the most exciting few moments for a long time on his usually boring Tuesday morning patrol.

The scribe, never one to miss an opportunity, suggested, to get a better look, the officer should sit in the driver's seat.

Half an hour later, the two were chatting like old friends. A 20-minute drive down the highway had done the officer the world of good (not to mention the scribe's bank balance). It had provided the policeman with a valuable break from his arduous task on the highway and had shown him a whole new world of motoring —courtesy of Volvo.

"You quite sure that's a Volvo?" he still inquired.

The scribe nodded.

"I wish we had those things on Patrol — it would certainly make life easier for us. Oh, by the way, we'll forget about that ticket and I'm pretty sure the coast is clear for the next 100 kilometres or so, so enjoy your testing.

The scribe, counting his blessings, roared off into the distance, leaving the young policeman muttering something about four-litre Commodores and lack of air conditioning.

Like most stories, there's a moral to be learnt. "Try not to speed, but if you do — make sure it's in something as spectacular as the Volvo 760 Turbo."

It's also very re-assuring to know that in these days of high technology and advanced motoring, that there is still appreciation shown when something special comes along — which of course is exactly what Volvo's latest and fastest-ever Australian offering is — something very special.

Technically, which we will look at in more detail later, the new Turbo Volvo is probably the most highly advanced and innovative factory turbo car Australia has ever seen. The 2.3 litre Turbo engine (the B23 ET, for those who are interested) is intercooled and has a computer-based control system for fuel-injection and ignition — known as 'Motronic'. This strict computer control uses a compact solid state microprocessor fed by 10 engine sensors that monitor air flow, engine speed, throttle position, fuel pressure, temperature and the like, to optimise fuel supply and ignition settings to provide the best possible performance. The result is so effective the engine doesn't even need an exhaust emission control system. But more on the high tech stuff later.

In basic terms, as our little story with the young policeman showed, the 760 Turbo is a truly amazing vehicle which manages to turn heads with both its unusual looks and its around-town and highway performance.

VOLVO 760 TURBO

Let's face it, people are not used to seeing a big, heavy Volvo take off from the line and get to 100 kmh in just over nine seconds. This sort of acceleration is only surpassed by the performance of the Porsche 911 Turbo, as far as factory cars go. The Volvo is way ahead of the Saab 900 APC Turbo up to 100 kilometres, while vehicles such as the Mercedes Benz 380 SE, the BMW 735i, the Audi Turbo and the Jaguar Sovereign are blown into the weeds by the new Swedish super car.

In fact, in comparison to the full array of factory turbo cars currently available on the market, the 760 Turbo returns the equal second fastest time. The Porsche 911 Turbo does a 13.7 standing 400 metres at a terminal speed of 170 kmh, while the Volvo and Mitsubishi's Turbo Starion do the quarter in 16.2 seconds at a speed of 141 kmh. Next comes the Audi 200T, then the Nissan Pulsar Exa, followed by the Saab 900 manual and last comes the Peugeot 505 SRD Turbo.

When you take in weight considerations to these times, the luxurious Volvo is way ahead. So no-one should complain about the car's get-up-and-go. However, in a lot of cars, speed over the quarter or up to 100 can be deceiving. You can have the fastest car tuned and set up just to get good specific times, with pretty ordinary power throughout the rest of the range . . . not so with the 760.

The power from the 2.3 litre turbocharged plant is progressive and smooth with none of that neck-wrenching power surge we used to know and hate. At all levels there is good available power with the rev range of the gears excellently matched to the engine.

Around town the big car can be driven hard through the tall gears while returning very healthy acceleration times and overall performance. It does 0-60 kmh in only four seconds, which is really good news when a stubborn tram seems intent on making your drive a slow one.

The secret behind Volvo's success is basically a well-thought-out and designed turbocharged engine from the very start. The constant air flow factor of the intricate Volvo design is the essence of its performance. All components are perfectly matched and the air flow is very smooth. This can only lead to one thing — a smooth and progressive, highly sophisticated engine.

The power output of the 760 Turbo is 127 kW at 5,700 rpm and the maximum torque of 250 Nm is delivered at the low engine speed of 3500 rpm.

With a compression ratio of 9.0:1 the Volvo Turbo has the highest compression ratio of any turbocharged petrol engine, a factor which is beneficial to both low speed performance and fuel consumption.

The Volvo 760 Turbo is based on an advanced technical concept.

The addition of an intercooler — the largest on today's vehicle market — lowers the air temperature downstream of the turbocharger, increasing the density of the air. As a result, the engine receives a greater volume of oxygen for more efficient flame propagation and near complete combustion. The intercooler also reduces any tendency for the engine to knock which enables the use of high compression.

As well, the intercooler allows a smaller turbocharger to be used (the Garrett TO3) which, because it requires less inertia, produces faster response and effective low speed boost pressure.

The electronic fuel injection and ignition of the 760 Turbo are both controlled by a micro computer which is programmed to give optimum ignition and fuel supply settings regardless of the demand situation.

The optimisation of fuel feed and ignition settings means that the newest Volvo does not require a separate exhaust emission control system.

The micro computor ensures the cleanest possible exhaust gases, maximum fuel efficiency and the best possible performance. In the programming of the micro computer, Volvo engineers have considered all facets of vehicle operation. In cold starting, for example, the lower the engine temperature the greater the required injection time. The computer memory includes temperature dependent factors which influence efficient cold starts.

Under heavy loads the charge air temperature becomes an important factor in performance and again the computer recalls the engine's needs. At high engine speeds the combination of air flow and throttle opening provide a new challenge for the wizard "black box". And when the throttle is closed at high speeds, the computer shuts down the fuel injection completely, enhancing fuel economy and ensuring that from the moment the foot is lifted from the pedal, exhaust emissions are nil.

As well, there is the added engine protection safeguard of an injection cut off which is activated if the engine is excessively over-revved, particularly at high speeds.

Looking at the turbocharger system in more detail, and it's worth noting that turbocharged engines are a well-established specialty of Volvo and since 1980 it has marketed a broad turbo program in the 240 series. In fact, last year Volvo was the leading European exporter of turbocharged petrol engined cars to the USA.

With the 760 Turbo program, Volvo engineers aimed for three objectives; according to Volvo's service product engineer, Karl-Erik Larsson:

"Firstly we set out to increase 'the big engine feel' of the turbo engine, that is to say to virtually eliminate the so called turbo lag," says Larsson.

"Secondly we wanted to further improve the performance level.

"But in addition we aimed at simultaneously reducing the fuel consumption in normal driving.

"The answer to this very difficult equation was found with the help of technology which is very similar to that used in an earlier engineering concept presented by Volvo, the VCCT — Volvo Computer Controlled Turbo.

"Our first objective was to give the turbo the characteristics of a big normally-aspirated engine.

"The response to the accelerator of a turbo engine is very much related to the 'size' of the turbo unit. The smaller the unit that can be used, the faster its response to engine acceleration.

"However, when it comes to response at high speeds and high power output, the turbo unit should be as large as possible in order to offer the least resistance to the flow of gases. This conflict in objectives is well known and particularly so for competition cars.

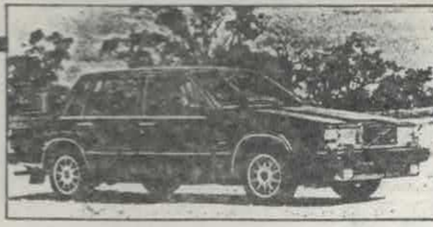
"The answer to the problem of being able to use a smaller turbo unit is the same as for racing engines. That means use of charge air cooling or to use Volvo terms: intercooling.

"When compressing the air in the turbo we also increase the result of the air temperature. Thus, the air becomes less dense which means less oxygen in a given amount of air. However, if we pass the boosted air through some form of cooler, its temperature will be reduced and the density of the air, and thereby its oxygen content, will be increased.

"A colder flow of boost air therefore means better volumetric efficiency, that is to say more air is inducted into the engine under a given pressure.

"Therefore, the boost pressure can be kept lower and for the Volvo Turbo it is a maximum of 0.55 bar (or 8 psi). Thus, the intercooler makes the compression more efficient and the amount of work to drive the compressor can be reduced. Therefore, it can be scaled-down in size to give less inertia and faster response. The lower boost pressure also means about 10 per cent (12.000) less r/min on the turbine under full load (compared with the 2.1 litre turbocharged engine without intercooling).

"The turbo need not run up to such high speeds to become



VOLVO 760 TURBO

effective. Useable boost pressure is now made available from as low a speed as 2,000 r/min. The result of this is that the new engine has better acceleration in the low rpm range and from lower road speeds.

"The Volvo 760 Turbo has a large intercooler mounted in front of the standard radiator for maximum efficiency. Like the standard radiator, it is assisted by the cooling fan. This is a great advantage under heavy loading at relatively low road speeds.

"The cooling capacity is very high and the temperature of the boost air can be reduced by as much as 45 to 50°C (80 to 90°F).

"In addition to better performance and faster response, the intercooler also gives us a number of other important advantages.

"Cooler intake air significantly reduces any tendency of irregular combustion in the engine, resulting in knocking or pinging.

"Therefore, the intercooler enables the effective compression ratio of the engine to be increased by about one unit, compared with a turbo engine without intercooling.

"Our new 2.3 litre turbocharged intercooled engine has a compression ratio of 9.1. To our knowledge this is the highest compression ratio of any make of turbo engine. The high compression ratio gives a seven per cent improvement in part-throttle fuel economy and about four per cent higher performance at conditions when turbo boost is not available. It also adds to better engine response in the low speed range.

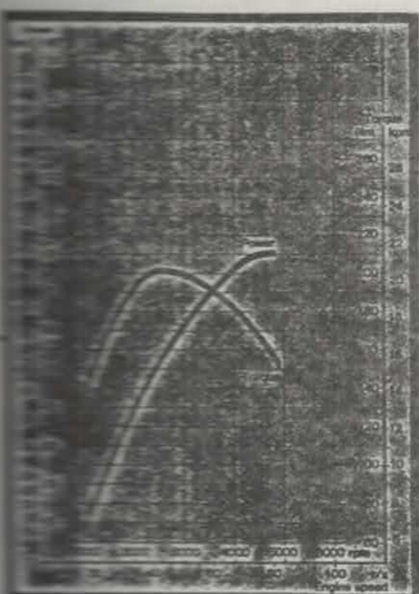
"Thanks to the cooler induction air, the lower boost pressure and the higher compression ratio, *we also get a lower specific exhaust gas temperature and a smaller specific gas flow.* This reduces the termal load on the engine itself, and also on the exhaust side components, which of course means even better realiability and longer service life," says Larrson.

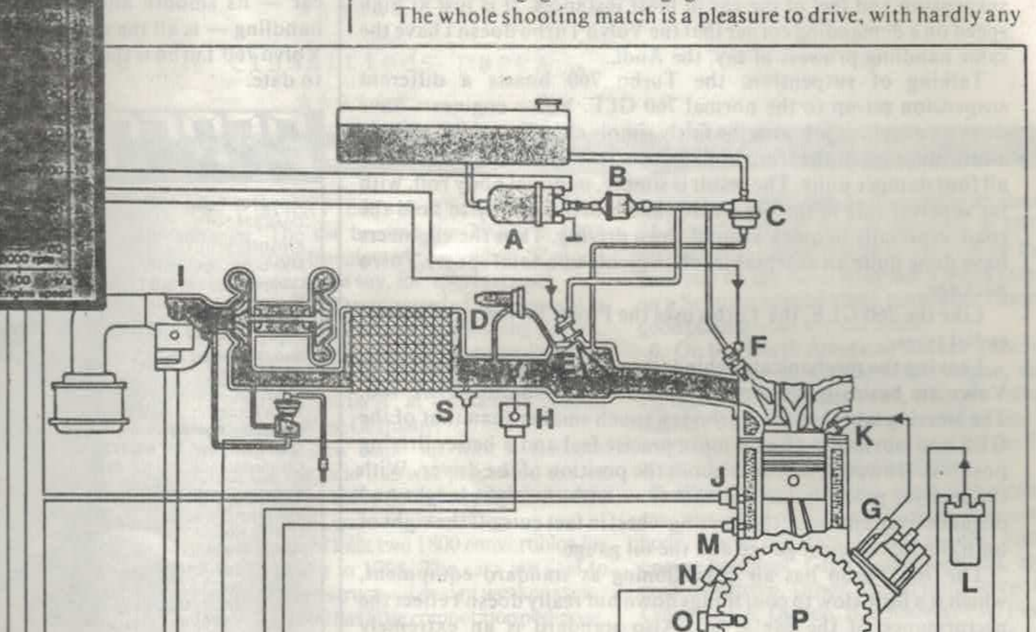
Moving on to the transmission in the 760 and it's fair to say it is nothing short of exceptional. The Turbo model is fitted with a four speed manual gearbox with a beautifully matched electronic overdrive for fifth. The electric overdrive is without doubt, the best we have seen on a factory car. It comes in smoothly and without any questions asked. Around town, the gearbox is light and responsive, with the lever well positioned for swift driving if need be. But once on the highway the beauty of the overedrive set-up shines through.

In our trip up the Hume and back, we had the overdrive system and the overall transmission working to a fine art. We practiced sitting on a cruising speed of around 140 in overdrive and when we approached slower traffic and had to wait to pass, we'd simply slip the hand over the overdrive button, the car would instantly change down to fourth gear, at which time it would be well into boost and pulling more than enough horses to pass three semi-trailers.

The overdrive switch on the shift knob is very easy to use and extra responsive, with a green light on the dash showing you if overdrive is engaged or disengaged.

The whole shooting match is a pleasure to drive, with hardly any





A Fuel pump
B Fuel filter
C Pressure regulator
D Auxiliary air valve
E Cold start valve
F Injection valve
G High tension distributor
H Throttle switch
I Air flow meter
J Thermo-time switch
K Spark plug
L Ignition coil
M Temperature sensor
N Tachometer sensor
O Reference sensor
P Ring gear
Q Ignition lock
R Electronic control
S Air temperature

[illegible] trip from Melbourne [illegible]

[illegible] the car is quiet and super-smooth [illegible] you are moving until you come up behind slower traffic and realise you have to wash off about 60 kmh in quite a hurry. The brakes are not the car's strongest point (we managed an average stopping distance from 100 kmh of 46.5 metres) and the heavy Volvo caused us a few heart-stopping moments as slow-moving caravans came closer to our bonnet [illegible].

But this was probably due to bad judgement by us, in that it is very hard to gauge your speed on the road when there is no engine noise or whistles from the wind. Everything is quiet and serene and the speed simply creeps up until you get a glimpse of the speedometer and rectify the situation.

Still on the subject of highway performance, which is very important for this particular car as it was on the fast autobahns and motorways that this particular beast was designed for, it's worth noting the majority of that nasty Volvo feel at speed has gone.

The swaying and wandering that has been synonomous with Volvos in this country seems to be eliminated from the Turbo model. It sits well at all speeds, with the only reservations coming when the car tries cornering a long sweeping turn at anything over 130 kmh. At this speed or more, it has a degree of understeer and tends to be twitchy and unsure, with every bump transforming itself through the steering wheel to give you quite a bit to do. This is a classic trait of the Volvo and before the Turbo, this feel combined with the horrible lack of power to make the Volvo a real slug in some circles.

But all that has changed, and don't get us wrong, so has the suspension and feel of the car in most instances. It is just at high speed on a demanding corner that the Volvo Turbo doesn't have the same handling prowess of say, the Audi.

Talking of suspension, the Turbo 760 boasts a different suspension set-up to the normal 760 GLE. Volvo engineers have done an excellent job with the fairly simple changes, which include a recalibration of the front coil spring struts and the rear coils and all four damper units. The result is simply, minimal body roll, with far superior ride to the old Volvos and a better ability to hold the road, especially in quick around-town driving. Thus the engineers have done quite an acceptable job in giving us a total sporty Volvo package.

Like the 760 GLE, the Turbo uses the Pirelli P6 low profile steel radial tyres.

Leaving the mechanicals behind, the appointments of the Turbo Volvo are basically the same as the normally-aspirated GLE 760. The steering wheel of the Turbo is a touch smaller than that of the GLE and obviously gives a more precise feel and a better driving position. However, one note about the position of the driver. With the seat set properly for me, that is — with the right height and distance from controls, the steering wheel in fact cuts off the sight of both the turbo boost gauge and the oil gauge.

The 760 Turbo has air conditioning as standard equipment, which is a little slow to cool things down but really doesn't effect the performance of the car at all. Also standard is an extremely pleasurable AM/FM radio-cassette player with graphic equaliser and rear booster speakers. This system is probably the most effective we have seen in a car for quite some time.

Other interior features include tinted glass everywhere except the windscreen, intermittent wipers, bulb integrity sensor, warning lamps for brake circuit failure, oil level and washer fluid level, as well as the normal array of warning instruments. There is also a delayed courtesy lighting system, reading lamps, central locking system, which gave us a little trouble during the test when it only locked three of the four doors, front and rear centre armrests with storage compartments, glovebox fitted with illuminated make-up mirror, power steering, electrically operated exterior rear view mirrors, rear sun curtains, safety triangles, electric windows, tachometer, front spoiler with fog lights, seat belt reminder warning lamp and an 82-litre fuel tank — perfect for those long trips.

Talking once again of long trips — the perfect life for this limo —fuel economy from the (difficult to fill up) fuel tank was quite good. We achieved a very acceptable 12.2 litres per 100 kilometres on the highway with an average speed of around 124 kmh. Around town, which included the awful Sydney traffic and battling with Melbourne trams, we achieved 13.2 litres per 100 kilometres. For the performance we were getting at all times, these figures are extremely pleasing.

General comfort inside the Volvo is very good. Highway noise, as we mentioned before, is next to nothing and the seating is good —especially the heating. Everything is well within the grasp of the driver, instrument location is OK, with the exception of the two gauges that are cut off by the placing of the wheel. Rear seating is also good, with heaps of room for passengers and even the capacity to carry long items through the back seat into the boot.

Volvo has always had its act together with interior (and exterior for that matter) appointments. The only things that the lovely Swedish cars lacked in the past were performance and handling. The 760 puts an end to that — and does it with style.

A pretty glowing report you say? Well it's hard to make up vices for a car and with the Volvo there are very few to detect. The turbo technology speaks for itself in that Volvo is way ahead with this vastly advanced intercooled turbo set-up. The performance of the car — its smooth and progressive ride coupled to its improved handling — is all the evidence you need to figure out that the new Volvo 760 Turbo is the Swedish company's best Australian offering to date.

PERFORMANCE DATA

Volvo 760 Turbo
Cost: $34,500

ENGINE: B23ET
Max boost: NA
Compression ratio: 9:1
Engine location: Front
Cylinders: Four
Capacity: 2316 cc
Bore/stroke: 96/80
Block: NA
Head: NA
Valve actuation: Single overhead camshaft
Induction: Fuel injected turbocharged
Claimed power: 127 kw/173 hp @ 5700 rpm
Claimed torque: 250 Nm @ 3400 rpm

TRANSMISSION: Four speed manual with overdrive
Driving wheels: Rear
Ratios: 1st: 4.03
2nd: 2.15
3rd: 1.37
4th: 1.00
5th: 0.79 Final drive: 3.54:1

SUSPENSION:
Front: independent McPherson struts
Rear: live axle, coil springs

STEERING TYPE: power assisted rack and pinion

BRAKES:
Front: 280 mm discs
Rear: 281 mm discs

WHEELS:
Material: Alloy
Diameter/width: 15 x 6 inches

TYRES:
Make/type: Pirelli P6
Dimensions: 195/60 R15

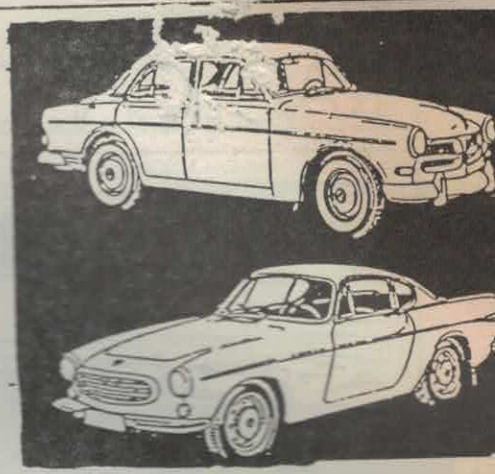
BODY DIMENSIONS:
Length: 478.5 mm
Width: 176 mm
Height: 141 mm
Wheelbase: 277 mm
Track F: 146 mm
Track R: 146 mm
Weight: 1840 kg

PERFORMANCE ODOMETER READING
60 km/h: 64
80 km/h: 74
100 km/h: 83

GEAR SPEEDS:
1st: 48
2nd: 89
3rd: 140
4th: 191
5th: 210

ACCELERATION:
Zero to 60 km/h: 4.0
80 km/h: 6.3
100 km/h: 9.1
120 km/h: 12.9
140 km/h: 17.7
160 km/h: 28.1
60 kmh-100 kmh: 4.24
100 kmh-140 kmh: 6.74
Standing 400 metres: 16.8
Terminal speed: 148 kmh
Braking from 100 kmh: 46.5 metres

CLASSIC VOLVO REGISTER



BRAKE DRUMS:

A new member has had new drums cast for his 122 at a reasonable price. The drums are rough and only require machining and drilling. Anyone interested can contact Lance for further details.

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Thinking of buying a 1800 or 120 then the reprinted feature from Practical Classics maybe useful to you.

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CLASSIC RUNS :

The aim of the Classic runs is get them out of the garage and their owners to enjoy a drive and the company of others. Let 1991 be the year we see more cars on a run.

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1800's have been featured a few times recently in the English Classic and Sportscar magazines.

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Cars for sale : See the classifieds pages .

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Ten things you didn't know about the Volvo P1800

1. The 'P' in the P1800's designation stands for *personvagn*. The car became the 1800S in 1963 when production transferred to Sweden, 'S' stood for Sweden – or, some say, for 'sports coupé'.

2. In 1961 the P1800 was awarded a gold medal at the Californian State Fair, for outstanding design, and it was the official car at the Sebring 24-Hour race in 1963 and 1964. It was awarded the title of 'Most Beautiful Sportscar' at a concours held at Baden-Baden in West Germany.

3. In 1965 Fissore came up with a fastback version of the car, and this was presented at that year's Turin show. Volvo denied any involvement, but the car found its way to Gothenburg.

4. Harold Radford built two 1800 convertibles for a Hull Volvo dealer in 1964. The cars are said to have suffered from structural design weaknesses.

5. The Volvo 1800 has little competition pedigree, although an 1800S finished second in its class a 24-Hour Sportscar race at Daytona, in 1967. car was also rallied briefly in 1961: Ewy Ros took one on the RAC Rally but a holed petrol on a Scottish special stage ruined her chance good placing – but she did finish.

6. On the North American market Volvo of a performance kit for the 1800S engine, com ing higher compression ratio, a bigger-valve high-lift cam, lighter flywheel, and so on. P went up to 135bhp, and the cost of the kit $299, with installation costing $100.

7. When it first appeared, about 50 per cent car was of British construction: Pressed body, Lucas electrics, Girling brakes, Vand engine bearings, GKN Sankey wheels, and cock overdrive. Other British firms were: C Covering Co, Dunlop, ICI, Joseph Fray, Pianc Supplies, SU Carburettor Co, Smiths, W Breeden, Worcester Windshields, Triplex Silent Channel Co. Ltd.

8. At the 1971 Paris show Sergio Coggiol sented a one-off based on the 1800ES (als work) called 1800ESC, or the Volvo V Mechanically the car was totally standard slightly longer and wider than the standard ca

9. When the P1800 was being built at Jen factory in West Bromwich, quality control w bad Volvo had to appoint a full-time represen at the factory to keep an eye on things...

10. It is estimated that only 12 Volvo-built P have survived in roadworthy condition in Brit

Above: Prototype Volvo 'sportscar' shown in May 1959. To be assembled in England. Left: Harold Radford-built convertible, 1964

PRACTICAL CLASSICS **BUYING** FEATURE

Buying a VOLVO 1800 or 120

Peter Simpson — our resident Volvo owner — profiles two of the long-lived cars from Sweden.

Buying a foreign car, especially an old foreign car, is something that the British are often not a little wary of. Apart from patriotic considerations, one hears tales of expensive and/or unobtainable parts, complex design leading to horrendous repair bills and a lack of durability because the cars are not designed to stand up to the British climate. There is one foreign manufacturer however whose cars do not suffer from any of these problems, and that is of course Volvo. In fact, a Volvo is more British than many so-called 'British' cars, as we will see later.

Before 1950 Volvo were a relatively small-scale manufacturer, producing cars mainly for the Scandinavian market. By 1970 however, Volvos were sold throughout the world, and the company was one of the largest motor manufacturers in Europe. Much of this change was brought about by the popularity of one model, the Volvo 120.

The Volvo 1800 (foreground) will be remembered by most people for one thing; it co-starred with Roger Moore in the television series 'The Saint'. Roger Moore was very impressed by the 1800 and drove one off-screen for many years. This 1970 1800E belongs to Chris Hart, and the 122S is owned by John Blundell.

Surprisingly, the 120 started life as an unofficial design project, carried out by Volvo's 23 year old designer Jan Wilsgaard, in his spare time. Breaking with tradition, Volvo decided to give the new car a name, and chose the name Amazon. However a German motorcycle manufacturer claimed, successfully, that the name was his copyright and Volvo were only able to use the name in Sweden. Elsewhere the cars were known collectively as the 120 range, each individual model having a different number as can be seen from the accompanying table. Despite a few teething troubles, Volvo very quickly found that they had a winner on their hands. Within four years of the launch in 1957 the cars were on sale throughout Europe and North America. Wherever the 120 went, complimentary road-tests followed it, many testers being impressed and surprised by the performance and handling of what was a very unpretentious looking car by the standards of the time.

Originally powered by the 1585cc B16 engine, the 120 received the 1778cc B18 unit in early 1961. In 1968, for the last two years of production the remaining models received

Early 1800s had 'cowhorn' front bumpers seen on this early Swedish built example (compare with heading picture). Jensen-built cars can be distinguished by a Volvo badge on the rear pillar and various interior trim differences. Only British-made cars had the name P1800 for a short time the Swedish built ones were called P1800S, then simply 1800S. The wheels on this car are not original.

The Volvo 120 range first appeared in 1957. For that time, the styling was very restrained, there was none of the excessive chrome and huge tail fins that many other manufacturers were adorning their cars with.

the B20 1986cc engine. Initially only four door 120s were available, but a two door saloon was introduced in early 1961, followed by the estate car in 1962. It was undoubtedly this that established Volvo's reputation for large, good quality estate cars, a reputation still enjoyed today. More minor improvements of one kind or another occured virtually every year; overdrive was available from 1960, automatic transmission from 1963, disc brakes from 1962 and from 1965 the well-known 'medically idealised' seats with adjustable lumbar support were fitted. Even after the 140 series became available in 1966 demand for two door 120s and Estates was sufficient to justify continued production and development — dual-circuit brakes, steering locks and front seat headrests were fitted before the last models finished production in July 1970. In thirteen years 667,323 120s were made, easily a production record for Volvo at the time.

My own 121. Although tatty, it is basically sound and well worth restoring. Cars in this condition are often available for around the £100 mark.

The 1800 range

It is surprising that Volvo ever considered it worthwhile producing the 1800. Their only previous excursion into this area was the short-lived P1900 sports car which was a disaster, only 67 cars being built. However, the profitable North American market, which Volvo wanted to exploit to the full would welcome a sporting car so Volvo decided to press ahead. The design for the new car was carried out in Italy during 1956, and originally it was planned to sub-contract production to Karmann, in West Germany. However, Karmann withdrew from the arrangement at a late stage (under pressure from VW), leaving Volvo to find a new home for P1800 production, there being no spare capacity at their own plants.

Club

All Volvo cars are catered for by the **Volvo Owners Club**, details of which can be obtained from Mrs S. Groves, 90 Down Road, Merrow, Guildford, Surrey GU1 2PZ. Please enclose a stamped, addressed envelope.

Volvo were already large customers to the British motor components industry, and the 120 was becoming popular in this country, so Volvo decided to have the 1800 produced in Britain. Agreement was reached in 1958 with Pressed Steel who would supply the 1800 bodyshells from their Linwood factory and Jensen Motors of West Bromwich who would assemble the cars. Two years later, in January 1961 production started. At first, the entire production was shipped to Sweden for quality-control inspections prior to being released. In 1963, production was switched to Sweden. Pressed Steel continued supplying the bodyshells until. 1970.

As with the 120s, almost every model year brought improvements of some kind, engine power being increased in 1964 and 1966 to 108bhp and 115bhp respectively. In 1968 the B20 engine was fitted and from 1970 Bosch fuel-injection replaced the twin SU carburettors. Externally the 1800 changed very little from its

The 120 Estate cars, known officially as the 22 series, were introduced in 1962. They soo acquired a reputation for being reliable load carriers that would continue running almost indefinitely . . .

. . . as well as having a huge carrying capacity.

inception until the autumn of 1971 when th 1800ES was introduced. This featured changed rear end which gave the car a 'sport ing estate' look, not unlike the Reliant Sci mitar GTE. Coupe and estate were produced together for a while, but coupe production finished in July 1972. The 1800ES was comparatively short-lived, US safety regulations killing if off, and the last car left the factory in June 1973.

(Continued

Buying a VOLVO 1800 or 120

Buyers Guide — 120

The Volvo 120 range is one of the very few sixties saloon cars which is economic to buy in "condition 3" and restore. This is mainly because the structure of the cars is extremely long-lasting, and a car with a badly corroded underside is almost unheard of. Check it anyway, floors sometimes rust, and although repairs can be done fairly easily provided the rust is not too advanced, with a little searching it should be possible to find a better car. Front wings rust around the headlamps and where they bolt on to the inner wings but replacements are readily available at £70 + VAT from Volvo dealers or £50-£60 from specialists. Inner wings also rust; again these can be obtained without difficulty, and welding them on is not difficult. Door bottoms and boot bottoms occasionally rust, but rust-free secondhand examples can be found without too much difficulty and new ones are available.

Under the 122S bonnet. Note the twin SU carburetters, and the coil, mounted on the bulkhead, just to the left of the battery. As an anti-theft precaution, all the low-tension connections to the coil are the other side of the bulkhead, and the L.T. leads running from the coil to the ignition switch are sealed.

Interiors are very hard wearing, especially the later type seats, and a surprising amount of interior trim is still available from Volvo. Mechanically, the cars are very long-lasting indeed, and 200,000 miles from a Volvo engine is not unusual. One peculiar problem with these engines is that, at high mileages, the fibre gear which performs the function normally carried out by the timing chain wears, resulting in a rattling sound from the front of the engine. Rectifying this problem is not difficult though. Uprated gears for competition use are available, and the driver who regularly uses his car at high speeds over long distances would be well advised to fit these. Whilst on the subject of uprating, a wide selection of 'bolt on' items to increase performance are available for these engines from specialists here and in Sweden, and with the right bits added a Volvo can give (truly surprisingly good) performance. I am hoping to carry out some performance modifications on my own 121 in the future, and I will explain further what can be done when I do this.

Production summary

	Model number	No of doors	Carburettors	Production date	Comments
120 range	121	4	1 Zenith Stromberg	1957-67	
	122S	4	2 SU	1957-67	
	123GT	2	2 SU	1966-70	High performance 115bhp engine
	131	2	1Zenith	1961-70	
	132	2	2 SU	1961-70	
	221	5	1ZE	1962-70	Estate Cars
	222	5	2 SU	1966-70	Estate Cars
1800 range	P1800	2	2 SU	1961-63	Built by Jensen in UK
	1800S	2	2 SU	1963-69	Swedish-built
	1800E	2	Fuel injection	1969-72	
	1800ES	3	Fuel injection	1971-1973	Redesigned rear bodywork

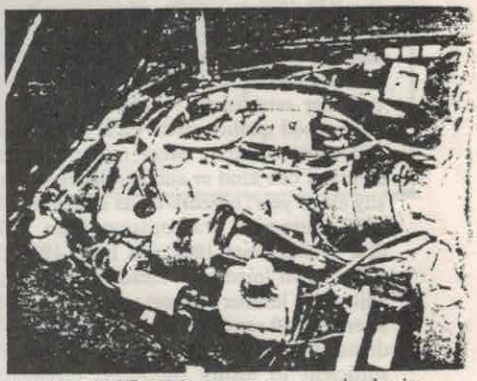
N.B. The above dates are when the cars were first available in Sweden, which is not neccesarily the same as when they appeared on the UK market.

1800

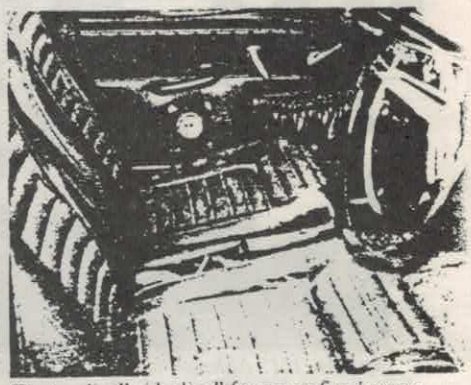
Partly because of its all welded construction, the 1800 is totally different from the buyer's point of view, and I would strongly advise a potential purchaser to buy the best car that can be afforded. Unfortunately the 1800 body does rust, and although replacements are available they are expensive (£100 for a sill, front wings £120 each, rear wings £110 from specialists, dealer prices are higher) and fitting them is not at all simple. Thus the 1800s should be examined thoroughly for corrosion underneath and on top. The leather seats on these cars will also be expensive to restore if damaged. All the 1800s had mechanical components based closely on the 120s, so the comments on the mechanics made in that section apply here also. The fuel-injection system fitted to post 1970 cars is said to be very reliable, but parts are expensive if it does give trouble. Some items of exterior and interior trim for the earlier cars are becoming scarce now, although at the time of writing the distinctive 'cowhorn' front bumpers are still available, albeit at a price.

Living with a Volvo

The newcomer to Volvo motoring who has previously owned a fifties or sixties British car will find much that is familiar. Many Volvo parts are British, Girling brakes, Zenith or S.U. carburation, Laycock overdrive, AC fuel pump, some Lucas electrical components, etc, etc. The layout of the cars is also completely conventional, and someone used to maintaining a British car should have little difficulty attending to the needs of a Volvo. Some parts can be expensive if purchased from main agents, but there are a large number of specialist dealers who offer very good discounts on new parts. Volvo parts availability is superb. For both the cars under consideration almost all mechanical and body parts are still available; the only items that are reputed to be in short supply are some engine components for the B16 unit and some items of interior and exterior trim, again mainly on the earlier models. Because of the car's popularity on the continent, there is a thriving reproduction parts industry there, and many of the specialist dealers import their parts direct from Sweden. Two such dealers are Tony

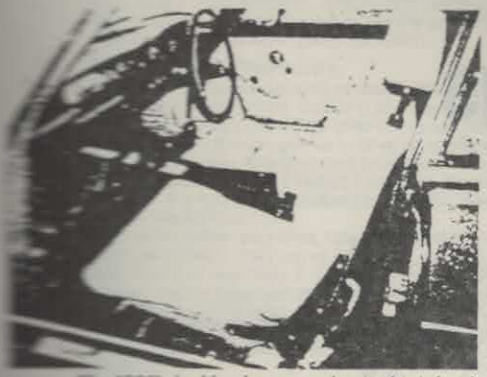


In the 1800E engine compartment the brake servo and fuel injection equipment take up a lot of space, making access to some items a little tricky.

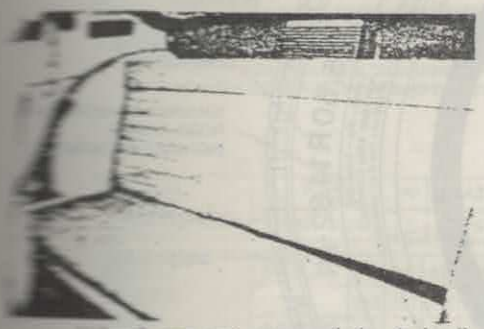


The 'medically idealised' front seats fitted to post 1965 120s were very advanced for the time and even today compare favourably with many modern cars. The soft vinyl seat covering may not be to everyone's taste but it is very hard wearing.

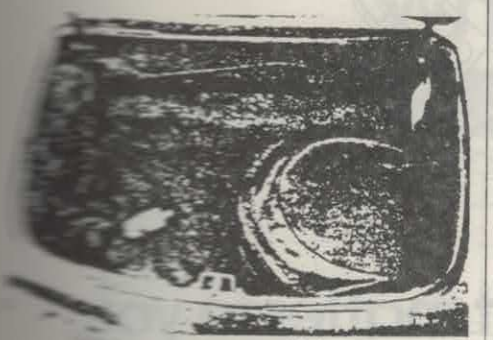
Buying a VOLVO 1800 or 120



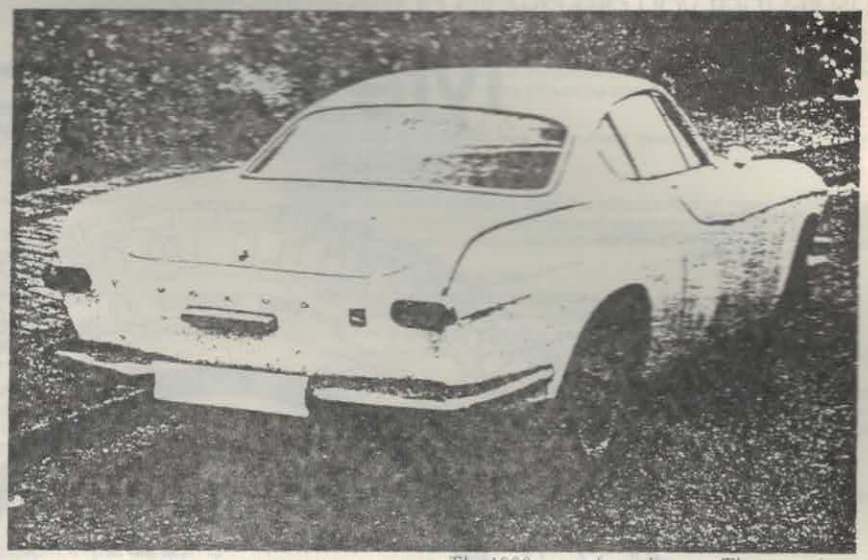
The 1800's had leather seats. Again this is hard-wearing but restoration is expensive. The dashboard is well equipped, and all instruments can be read easily from the driver's seat.



Although rear seat accommodation is hardly generous there is adequate space for two children or one adult sitting sideways, provided they don't mind bumping their heads on the rear screen.



The boot space is reasonable by sports car standards, although it is unfortunate that the spare wheel protrudes into the luggage compartment.



The 1800 coupe from the rear. The rear wings, along with all forward panels were retained for the 1800ES, the 'estate' type bodywork being grafted onto the top of the rear wings.

Price Guide

I paid £40 for my 121, and although I understand that was unusually cheap it should be possible to find a worthwhile restoration project for well under £150. At this end of the market, saloons and estates command roughly equal prices, the only 120 that is dearer is the sought-after 123GT which will probably cost at least £250. From there prices increase with condition, a completely rebuilt or very good original saloon will cost around £1500 and an estate around £2000. By choosing a subject carefully it should be possible to restore your own car for less than this. 123GTs rarely come onto the market, but these seem to bring around 50% more than a comparable saloon.

1800s start at around £250, but a sound car will cost from around £1000. A reasonable 1800 will probably cost around £2000, and a good one from £3000 upwards. The ES models seem to be slightly dearer than the coupes, and few of these come onto the market in the under £2000 categories.

Barry whose company South Service trades from Arch 162, Stamford Brook, London W6 (01-741 3300/7500) and Chris Hart of LH Autos, Rear of 110 Upper Richmond Road, Putney, London SW15 2SP (01-788 2406). South Service supply parts for all types of Volvo at at least 25% off the Volvo recommended price and are able to post items anywhere. Chris Hart specialises in 120s and 1800s, along with the PV444/544 range and a well as stocking a wide range of new parts, again at discount prices, he has probably the largest stock of secondhand 120 parts in the country. Chris also offers a full mechanical and body repair service for older Volvos, and often has a good selection of cars in all sorts of condition for sale.

To drive, both the cars under consideration feel much younger than they are. Acceleration, cornering and general handling are all superb; in fact when driving my own 121 I frequently forget its age! All in all, either car is ideal as everyday transport, and as the price table shows, the 120 is still cheap to buy for what it offers. I wonder for how much longer though . . . □

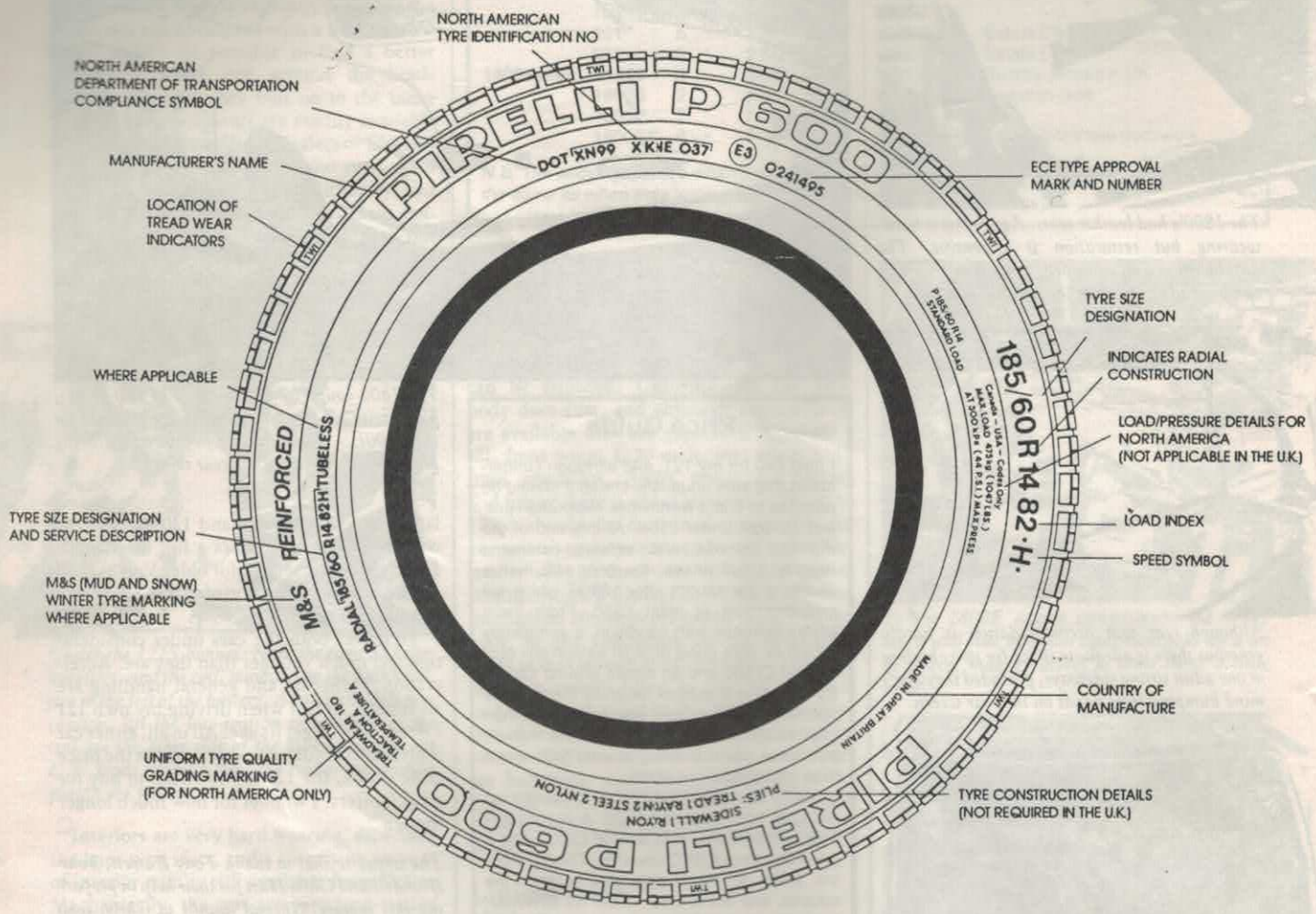
The writer wishes to thank Tony Barrett, John Blundell and Chris Hart for their help in preparing this feature. Special thanks to Chris, who stood around for nearly three hours in sub-zero temperatures whilst I took the photographs.

The wrap-round rear windscreen, although a popular design feature in the late fifties was probably used by Volvo as much because of the excellent visibility it gives. Mud flaps were fitted as standard to all 120s.

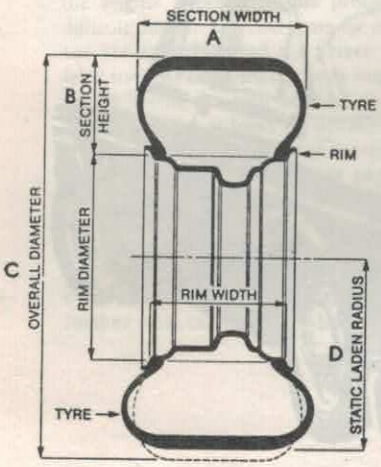
YOU AND YOUR TYRES

The information contained in this brochure is designed to assist you in both the purchase and the maintenance of tyres for your car. Many options are open to you, and at Pirelli we believe that we have an obligation to you, the driver – to ensure that you are aware of the correct options.

Tyre Markings



Understanding the Markings that matter to you.



Dimensions:

All dimensions quoted refer to a new tyre on a measuring rim with the tyre inflated. Following are useful terms.

Measuring Rim: The control rim used as a reference to determine dimensional data for a given tyre.

A. Section Width: Total inflated width of the tyre at the widest point, excluding kerbing ribs and lettering. *Note* – when a tyre is fitted to a wider or narrower rim than the measuring rim, the section width will change by approx. 5mm for each 0.5" change in rim width.

B. Section Height: The height from tyre bead to crown.

C. Overall Diameter: The diameter of a new tyre fitted and inflated on a rim in an unloaded condition i.e. off the vehicle.

D. Static Loaded Radius: The distance between wheel centre and road surface with the tyre laden.

Rolling Circumference: The distance an inflated and loaded tyre will roll in one revolution at 100 Km/h.

Revs/Km: The number of revolutions per kilometre of a tyre in a loaded condition at 100 Km/h.

It is important that tyres are suitable in all respects for the vehicle to which they are fitted. Pirelli tyres carry internationally standardised identification markings which should be treated in the same way as a part number to ensure the correct choice of tyre.

Size Designation & Service Description:

The Size Designation and Service Description together indicate the tyre dimensions, structure, load capacity and speed rating.

A typical example: 185/60R14 82H.

- 185 = the appropriate tyre section width in mm when fitted to its measuring rim.
- 60 = the tyre aspect ratio, in that the tyre section height is 60% of its section width.
- R = indicates the tyre is of 'Radial' construction.
- 14 = the diameter of the rim to which the tyre must be fitted – 14".

The Service Description is the combination of the load index and speed symbol.

- 82 = the Load Index (LI) is a numerical code indicating the maximum load a tyre can carry at the speed indicated by its speed symbol.
- H = the Speed Symbol; an alphabetical code indicating the speed at which the tyre can carry a load corresponding to its load index. (See tables of speed symbols and load indices below.)

All the above markings may be found on the sidewall of the tyre.

Tyre Care

Pirelli tyres will give excellent performance when correctly used and maintained. Remember – tyres are the only parts of your car in contact with the road. Safety in acceleration, braking and cornering all depend on a small area of road contact, so it is imperative that the correct tyres are fitted to the car and are always maintained in good condition.

Tyre Inflation Pressures.

Check tyre pressures regularly, at least fortnightly, including the spare. Pressures should be checked cold, before a journey, as there is an increase in pressure when the tyre has warmed up after being run. Never bleed pressures when the tyres are warm. It is dangerous to drive on under-inflated tyres, as car handling may be adversely affected and tyre failure may result from excessive flexing and heat build-up. The CORRECT pressure for your car and its usage can be found on the Tyre Placard affixed to your car. (See example Placard above, in "Which Tyre Fits Your Car.")

To correctly inflate your tyres, take care to read the fine print. In the case of this example above – the normal MINIMUM pressure would be 170kPa (24 PSI) for both front and rear tyres. If, however, you loaded the vehicle (with either passengers and/or luggage) then the pressures should be 170kPa (24 PSI) front – and 200kPa (28 PSI) rear.

Further, if you intend to travel at speed (say 100 kph) then either the MINIMUM or loaded pressures must be increased by 30kPa (4 PSI).

Therefore:	Front	Rear
NO Passengers/Luggage	170 (24)	170 (24)
WITH Passengers/Luggage	170 (24)	200 (28)
AT SPEED +30 (4 PSI)	200 (28)	230 (32)

Each vehicle is different, so always check your Placard.

Tyre Examination.

Inspect tyres regularly, paying particular attention to:

(i) Objects embedded in the tread; remove all stones and other objects embedded in the tyre tread.

(ii) Tread wear; ensure tyres have adequate tread depth. If tyres are worn to the tread-wear indicators, they should be replaced.

(iii) Sidewall condition; if there are bulges and cuts, have the tyre examined by a Pirelli Approved dealer, as the damage may be more serious than it appears.

Uneven Wear.

Tyres showing wear on one side, or showing feathered edges to the tread pattern, are often indicative of mechanical maladjustment. The car's steering, and/or suspension geometry, should be checked by the vehicle or tyre dealer.

Wheel Balance.

It is essential to balance tyre and wheel assemblies, if vibration or steering shimmy is to be avoided.

Tyre Rotation.

Modern tyre tread patterns, and the introduction of many front-wheel drive cars, have increased the importance of regular tyre rotation. (Front-wheel drive considerably influences wear on both the driven front tyres and the rolling rear tyres.) Rotation can:

- maximise overall tread life
- even-out front & rear wear patterns
- quieten tyre noise & lessen vibration

Tyre rotation is recommended as follows:

- change the direction of ROLLING tyres by exchanging them diagonally across the car
- maintain the direction of rotation of the DRIVEN tyres by moving them from front to rear (front-wheel drive cars), or rear to front (rear-wheel drive cars).

NOTE: For vehicles with different-sized front and rear tyres, please consult your vehicle handbook or Pirelli.

Valves.

When replacing tubeless tyres, ensure a new valve is fitted. Check valves for air leaks when checking tyre pressures.

★ Always use "air sealing" metal or hard nylon valve caps.

SPEED CATEGORY	SPEED CAT. SYMBOL	A1	A2	A3	A4	A5	A6	A7	A8	B	C	D	E	F	G	J	K	L	M	N	P	Q	R	S	T	U	H	V	Z
	SPEED Km/Hr	5	10	15	20	25	30	35	40	50	60	65	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	240	OVER 240

LOAD INDEX Load Capacities Per Wheel (kg)																														
	INDICES	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
	Kg	250	257	265	272	280	290	300	307	315	325	335	345	355	365	375	387	400	412	425	437	450	462	475	487	500	515	530	545
	INDICES	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	
	Kg	560	580	600	615	630	650	670	690	710	730	750	775	800	825	850	875	900	925	950	975	1000	1030	1060	1090	1120	1150	1180	

Which tyres fit your car?

RECOMMENDED TYRE & RIM SIZES & INFLATION PRESSURES kPa (P.S.I.) COLD						
TYRE SIZE DESIGNATION	RIM CODE	NORMAL LOAD		MAX LOAD		
		FRONT	REAR	FRONT	REAR	
P165/75SR13	5J	170 (24)	170 (24)	170 (24)	200 (28)	
P175/65HR14 P185/60HR14 185/60R14 82H	5½JJ					
The tyres fitted to this vehicle shall have a maximum load rating not less than 400 kg, or a load index of 76 and a speed category not less than S.						
FOR CONSISTENT HIGH SPEED OPERATION, COLD INFLATION PRESSURES MUST BE INCREASED BY 30 kPa (4 PSI). FOR TRAILER TOWING AND ADDITIONAL TYRE CARE ADVICE REFER OWNERS MANUAL.						R

If your car was first registered and sold on or after 1st January, 1973, then Australian Design Rule No. 24 specified requirements for tyres and rims appropriate to your vehicle's load capacity, rim size, and speed characteristics.

The specification for your vehicle is nominated on a placard (see example, left) affixed to the glove compartment door, inside driver's door sill, or other accessible location.

It is essential when replacing tyres on your vehicle that they meet at least these minimum standards, as detailed on your placard.

When you do replace your tyres, care must be taken to ensure that the tyres' load carrying capacity and speed rating are at least equal to – and possibly better than – the sizes shown on the placard and/or the nominated load index and speed rating shown on the placard (whichever is the minimum).

Care must also be taken to ensure that you comply with local road and vehicle legislations. The following tables give a guide to theoretical fitments, and your local Pirelli Approved Sales and Service Centre can advise specific recommendations for your vehicle.

Conversion to lower profile tyres

Converting to ultra low profile tyres is one of the most effective and economical ways of enhancing both the appearance and handling characteristics of many cars.

Some ultra low profile tyres may fit a car's existing wheels, but in many cases, a change in rim width and diameter will further improve performance, whilst keeping the car's overall gearing and ground clearance similar.

The chart below demonstrates how the original tyre size may be varied to accommodate individual requirements, whilst still keeping similar rolling dimensions and load capacity to the original tyre fitment. These are size-for-size conversions and not recommendations for any given car.

When converting tyre and wheel size, or both, ensure the conversion is suitable for the vehicle, and meets state legislation.

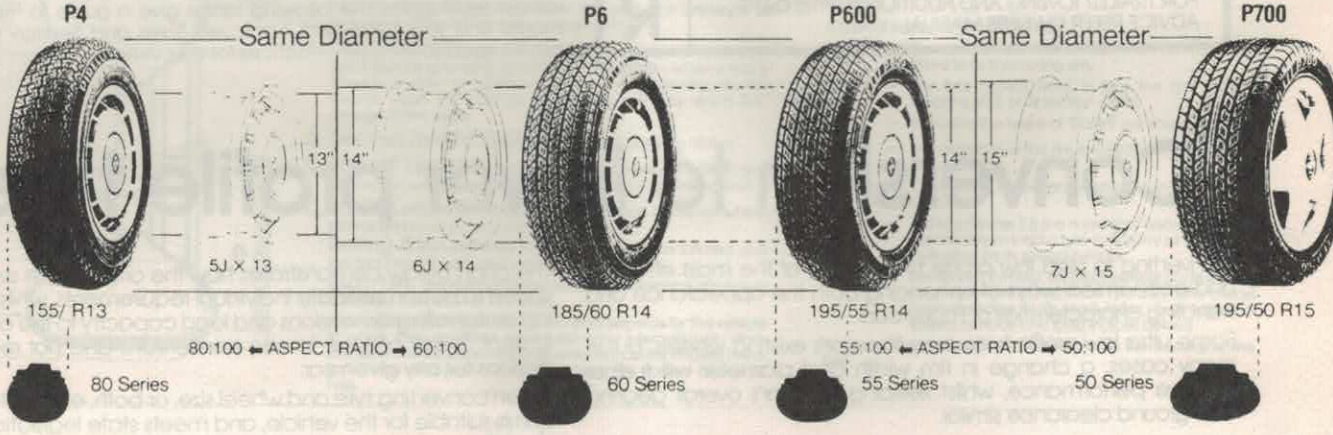
	P METRIC		MILLIMETRIC						
	75 Series	65 Series	82 Series	70 Series	65 Series	60 Series	55 Series	50 Series	45/40/35 Series
14						185/60R14 578:5:184:475	195/55R14 570:5½:196:474		
						195/60R14 590:5½:196:515	205/55R14 582:5½:203:515	205/50R15 (+1) 587:5½:203:515	
		P185/65R14 596:5:184:515	155R14 604:4½:157:450	175/70R14 602:5½:177:500	185/65R14 596:5:185:515	205/60R14 602:5½:203:560	205/55R15 (+1) 607:5½:203:545	225/50R15 (+1) 607:6:223:600	285/40R15 (+1) 225/45R16 (+2) 609:9½:285:630 607:7½:228:580
		P195/65R14 610:5½:196:545			195/65R14 610:5½:196:580	195/60R15 (+1) 615:5½:196:545	215/55R15 (+1) 617:6:216:580	205/50R16 (+2) 612:5½:203:530	255/45R15 (+1) 611:8½:258:650
	P175/75R14 618:5:177:530		165R14 622:4½:167:500	185/70R14 624:5:184:560	185/65R15 (+1) 631:5:185:545	225/60R14 626:6½:225:670			345/35R15 (+1) 245/45R16 (+2) 623:11½:345:699 626:8:240:670
	P185/75R14 634:5:184:580	P205/65R14 622:5½:203:600	175R14 634:5:178:560	195/70R14 636:5½:197:615	205/65R14 622:5½:203:615	205/60R15 (+1) 627:5½:203:600	205/55R16 (+2) 632:5½:203:560	225/50R16 (+2) 632:6:223:630	215/45R17 (+3) 626:7:213:545
		P215/65R14 636:6:216:650			195/65R15 (+1) 635:5½:196:615	215/60R15 (+1) 638:6:216:650	235/55R15 (+1) 639:6½:236:690		235/45R17 (+3) 638:8:236:652
	P195/75R14 648:5½:196:630	P225/65R14 648:6:223:710	185R14 650:5½:188:600	205/70R14 644:5½:203:690	205/65R15 (+1) 647:5½:203:670	225/60R15 (+1) 651:6:223:690	215/55R16 (+2) 642:6:216:615		255/40R17 (+3) 265/40R17 (+3) 644:9:261:670 644:9:263:710
							225/55R16 (+2) 654:6:223:650	255/50R16 662:7:257:775	
	P205/75R14 664:5½:203:690		195R14 666:5½:198:650	205/70R15 (+1) 669:5½:202:690		235/60R15 (+1) 664:6½:236:750		285/50R15 (+1) 667:8:286:900	
	P215/75R14 678:6:216:750	P225/65R15 (+1) 673:6:223:750	205R14 686:6:208:710		225/65R15 (+1) 673:6:223:775	255/60R15 (+1) 688:7:265:850		265/50R16 (+2) 672:7½:267:825	
			215R14 700:6:218:805	235/70R14 686:6½:235:825			275/55R15 (+1) 683:7½:274:900		
15									225/45R16 215/40R17 607:7½:228:580 607:7:210:487
			145R15 616:4:147:425	165/70R15 613:4½:165:475	185/65R15 621:5:183:545	195/60R15 616:5½:196:545	205/55R15 607:5½:203:545	205/50R16 (+1) 612:5½:203:530	345/35R15 245/45R16 (+1) 623:11½:345:690 622:8:240:670
		P195/65R15 635:5½:196:580	155R15 630:4½:157:475	175/70R15 627:5½:176:530	195/65R15 635:5½:196:615	205/60R15 627:5½:203:600	205/55R16 (+1) 632:5½:203:560	225/50R16 (+1) 632:6:223:630	215/45R17 (+2) 630:7½:218:545
						215/60R15 638:6:216:650	235/55R15 639:6½:236:690		215/50R17 (+2) 235/45R17 (+2) 650:6:220:600 638:8:236:650
	P175/75R15 643:5:177:560	P205/65R15 647:5½:203:630	165R15 646:4½:167:530	185/70R15 648:5:184:580	205/65R15 647:5½:203:670	225/60R15 651:6:223:690	215/55R16 (+1) 642:6:216:615		255/40R17 (+2) 265/40R17 (+2) 644:9:261:670 644:9:263:710
	P185/75R15 659:5:184:615		175R15 660:5:178:580	195/70R15 656:5½:197:630	215/65R15 664:6:217:710	235/60R15 664:6½:236:750	225/55R16 (+1) 654:6:223:650	285/50R15 667:8:286:900	
	P195/75R15 673:5½:196:670	P225/65R15 673:6:223:750	185R15 674:5½:188:615	205/70R15 669:5½:202:690	225/65R15 673:6:223:775	235/60R15 664:6½:236:750		255/50R16 662:7:257:775	
	P205/75R15 689:5½:203:730		195R15 690:5½:198:670	215/70R15 682:6:216:730		255/60R15 688:7:255:850		265/50R16 (+2) 672:7½:267:825	
	P215/75R15 703:6:216:800			225/70R15 696:6:223:800					
	P225/75R15 719:6:223:850		205R15 711:5½:203:735	235/70R15 712:6½:234:875					
16							205/55R16 632:5½:204:560		215/45R17 (+1) 626:7:213:545
								225/50R16 632:6:223:630	235/45R17 (+1) 644:8:236:650
							215/55R16 642:6:216:615		255/40R17 (+1) 265/40R17 (+1) 644:9:261:670 644:9:263:710
							225/55R16 654:6:223:650	255/50R16 662:7:257:775	

Data interpreted as follows:
eg: 155 R13 where 155 R13 – Tyre size designation.
578:4½:157:425 578 – Tyre diam. in mm.
4½ – Rim width in inches, used for measuring.
157 – Tyre section width in mm on measuring rim.
425 – Max. load in Kg. standard or 4 ply rating.

Data Sources: T. & R.A.A., E.T.R.T.O., actual measurements.

6/89

THE PIRELLI "PLUS ONE, PLUS TWO" CONCEPT



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