

HARTECH AUTOMOTIVE

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HARTECH AUTOMOTIVE

Welcome to Hartech Automotive **INDEPENDENT PORSCHE SPECIALISTS**

Hartech Automotive has developed into a Leading Independent Porsche Specialist Dedicated to providing the highest quality service for Porsche's (usually over 4 years old plus), specifically tailored to their typical owners needs.

We probably share with you, the belief that the cars listed are amongst the very best Sports cars available, with superb performance and handling, exceptional long life, a fantastic reputation and unbeatable value. In view of this, the guide has not concentrated on these unique benefits, that are universally accepted, but instead has concentrated on down to earth information and comment about the different models, the industry, prices, corruption, competitors, benefits, pitfalls etc.

By openly identifying faults and problems, we hope that this will not deter potential buyers, since by comparison to almost any other Sports car (and indeed many domestic cars), the reliability and low running costs are unbeatable. However most readers are well aware of the advantages but may not be so well informed about the shortcomings, that we feel are what they are hoping to read about. Even when these rare problems occur, the guide explains exactly how Hartech provides the best and most suitable range of support services available and backs this up with a revolutionary, unique and affordable maintenance package that supports the very low running costs and reassuring reliability claimed.

Unfortunately for some - mistakes made buying the wrong car or not recognising the typical signs of impending failure - results in higher repair costs than may have otherwise been necessary. So if you are interested in buying a Porsche or already have one and need it to be looked after properly, by people who care about you, your car and to make ownership affordable, then this guide will provide the answers. It contains a broad range of information that should help you make the right decisions.

Everyone at Hartech is 100% behind this publication and the information provided and hopes that it will help you to improve your enjoyment of your Porsche, by helping you buy a good car or deciding where to take it for servicing or repairs.

You - the customer - are what we have all worked hard to cater for, so you are highest on our list of priorities.

It is not a problem to spend time helping you, answering questions, checking your car or providing services, spares or advice.

We all regard the opportunity to be of assistance as a pleasure and basically - what we are all here for.

You may find out more information on our web site or if you prefer and we can be of any further assistance, please do not hesitate to contact us directly.

From all the Staff at

Hartech Automotive.

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MAJOR NEW INVESTMENT & EXPANSION IN PROGRESS.

Here at Hartech we have a superb reputation for providing the very best services for the purchase and maintenance of older Porsche's. We are now in the process of creating – probably the most efficient facility for the independent Porsche market ever in the UK – enabling us to continue to combine the lowest overheads with the widest and most affordable customer orientated range of services available. How and why? – please allow us a few paragraphs to explain.

With Official Porsche centres selling and servicing new models, their need for appropriately smart workshops inevitably results in high overheads. While they often offer lower rates for work on older cars – there is no doubt that it is more often the independent sector of the Porsche specialist market that specifically tailor their operation to cater for the different needs of older cars. This is both somewhat inevitable and sensible - as the older a car becomes the more labour intensive any remedial work may be. The lower the overheads that they can operate with – the more affordable the services are to owners who probably have fewer funds available for car repairs anyway.

Newer cars rarely need extensive repairs and the service replacement parts are easily predictable enabling their length of stay in expensive workshops to be limited. Older cars however - present a logistical problem to all repair centres. They begin to require much more varied and labour intensive work – resulting in higher costs. Furthermore – it is more likely that delays will occur while the customer is contacted to authorise the repair costs necessary or some more unusual spare parts are sourced. Often the car will have been partially stripped at this stage and immobilised - taking up expensive ramp space – earning nothing. This would present difficulties to a small independent operation where that space is needed for the next job and the range of parts stocked is limited.

The only solution to this is to have a huge range of spares available off the shelf and a lot of ramps and workshop space, but both can only be accommodated in a large operation – which tends to contradict the “low overhead” principle – usually increasing costs.

These logistical problems have either handicapped many independent operations from sufficient growth, or if they have expanded, they often then become too expensive again and unable to devote as much time to the older cars, as they need. Together with the problems of handling increasingly demanding customers (having less money to spend on cars that have deteriorated more and therefore need more doing to them to keep them running), some independent specialists have resorted to selling off or sub - contracting their workshops to concentrate on sales. This inevitably distances them from up to date knowledge of current problems and limits their ability to carry out expensive sales preparatory work and after sales support. Others have a small “token” workshop – but no real interest in the workshop or sufficient turnover to compete with a larger operation – sales is their main interest.

In contrast – far from avoiding these problems - we have always had a much larger workshop than showroom. This clearly reinforces our belief in the link between the quality of our workmanship (and the quality of the cars we service, repair and prepare for sale) and the success of the business – by taking on possibly the largest workshop facilities in the Independent Porsche market in the Country - finally securing a permanent base.

All models develop problems with time and the more cars you come into contact with, the easier it is to work out which problems are isolated and which will become re-occurrences that require special attention. Often the solution to a new problem takes time to reach, after which the next car with the same problem becomes easy to diagnose. With possibly more service and repair customers than any other independent operation, as new problems emerge, we are at the forefront of this process (as we were with the 16 Valve 944 camshaft problems and developing successful replacement wishbone ball joints – for example – both of which have benefited countless customers by avoiding unnecessary damage and lowering replacement costs).

Our philosophy of putting the “engineering” first continues with double the original space (to 13,000 square feet). Also, differences in the costs of premises, houses and the cost of living in the NorthWest have enabled us to provide exceptional quality of services and workmanship at very

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reasonable prices. This has increasingly encouraged customers to bring their Porsche's long distances from all over the UK (and even Europe), finding that temporary travel inconvenience is more than compensated for by the value for money and indeed the care and attention they receive. This is particularly beneficial when a car needs several replacement parts (such as belts, a clutch or a water pump for example) that – combined with a service – qualify for considerable price reductions that justify the cost and inconvenience of travelling. These new facilities provide increased capacity and in addition to all the original services, will also incorporate the following improvements: -

- (1) 10 lifting ramps. (2) Tyre supply & fitting. (3) Electronic wheel balancing. (4) Engine/Gearbox assembly room. (5) 3000 sq ft of stores space. (6) Laser 4 * wheel alignment. (7) Engineering machine shop and manufacturing area. (8) Automated parts cleaner in purpose built room. (9) Heated reception. (10) Gas central heated workshops. (11) Exhaust gas extraction. (12) Larger indoor showroom. (13) Allocated parking. (14) Disabled facilities and access. (15) Push button remote automatic workshop access. (16) Security - incorporating Red Care, Video recording, multiple TV continuous monitoring, radio back up transmission, anti-ram bars etc. (17) Car transporter collection & delivery services at subsidised rates.

Although we have always invested in our various leased premises, we were always held back by the comparatively short terms involved. The permanence of our new home presents no such limitations – enabling us to justify the implementation of many good ideas that we have had for several years. This is a major part of the overall difference between other specialists and us. Having always tried to build a very efficient base, we were aware that special major structural changes would render the operation even more efficient than before and that the layout, drainage, lighting, etc have all been carefully considered and meticulously planned to enable future running costs to be minimised.

However – if all that structural work had been carried out in advance by building sub-contractors - it would have cost so much that it would again increase costs and the resulting hourly labour rate significantly.

Instead we have carried out all the work ourselves gradually over many months. Indeed there is still a great deal left to do – but by working within the new environment it has been possible to fine tune the ideas as things are gradually improved. By being prepared to work hard over many months – the result will be the very best facility available to owners of older Porsche's – provided at a very moderate cost - enabling us to continue to devote more expert time to customers needs at prices that will be unbeatable.

Although it may not be ideal right now for customers to be received while building work is continuing – the long-term benefits will more than compensate for any short-term inconvenience and existing customers - already appreciating this - have been extremely supportive. Furthermore recent re-investment in a new integrated networked computer system will ensure that the unrivalled quality of management information and records systems will continue to provide an unbeatable data-base of information on hundreds of cars, enabling the highest quality of planned maintenance to be accomplished. As well as the improvements listed above there are several other important changes that are planned in time.

For many years we have not competed head on with the main agents, by selling our newest "Hartech" cars when their age rendered them arguably just too old for operations set up to sell brand new cars (i.e. there is a mileage and age limit beyond which many agents do not sell cars and they sell on older part exchange cars to independent organisations instead). This has usually been at around 4 -5 years old and older. We felt that our philosophy, facilities, experience, lower overheads and costs - were more suitable for the older models and were comfortable supplying a tailor made service - taking over where the main agents seemed to restrict their services.

However we have also been increasingly disappointed at the initial condition of relatively new cars that we have serviced and repaired or have brought up to our standards to sell. We were shocked to find that 4 year old cars needed the wheels to be kicked off the hubs (because they were stuck) and the cross drilled discs had never been cleaned out etc, until we realised that our interpretation of the service schedule requirements – could be quite different.

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For example – where a 12K service states to conduct a “visual inspection of the discs and pads” – we interpret that as removing all wheels, freeing the pads, cleaning out any crossed drilled holes, lubricating the wheel nuts, threads and mating faces, re-assembling and torquing the wheel nuts, etc (taking perhaps 20 mins/car). To others it may mean to look past the wheels at the discs behind (taking perhaps 20 secs/car – or if the mileage is low and the pad warning lights are not on – doing absolutely nothing). This approach could be mirrored in many other areas – making our interpretation take perhaps 20 times longer. The benefit of our interpretation is that we have checked everything and lubricated all sorts of parts so by next time the car comes in (and for years to come) everything comes apart beautifully. The other interpretation results in the service (which is probably at a similar price) being very profitable for those cutting corners - in the short term. Eventually – when new discs or pads are needed – cars looked after “our way” are easy to work on – but the others cause problems with seized bolts, corroded parts and general decline. Perhaps at this point they have generally moved on to the independent sector anyway – who are more used to dealing with the problems of older cars.

Then there are some jobs listed that are simply not done by some service providers. We frequently come to remove – say and exhaust – to gain access to an engine to check tappets or replace an oil filter – to discover seized and rusted bolts that snap – because they haven’t been removed for years. Those that previously ignored the work made more profit to spend on more advertising etc – but for the cars involved – eventually someone picks up the extra cost of remedial work when something more involved is required and the job is done properly. So - many specialists - short cut - the work required on newer cars (because they believe that they are too new to make any immediate difference especially in the time scale that the owner is likely to keep the car) hoping that they will get away with it in the short term.

We realised from all this that many cars would have been in better condition if we utilised the extra time that our lower overheads offer to practice our more thorough approach at an earlier stage. However if some operations are short cutting work on newer cars, this once again raises the problem of costs and competitiveness for anyone doing the work properly

and reliably. We know of some very conscientious independent service centres that have closed down because they could not make it pay because they would not compromise their standards in a competitively priced market. Indeed there is a strange scenario becoming more relevant in this ever increasingly technological world. Those that short cut work, make more money to spend on media advertising – attracting more customers and squeezing out their legitimate reliable competitors. Furthermore – the price that the public expect to pay (now more competitive thanks to published price lists, menu pricing and internet access) is becoming set more by those doing a cheap job because they can afford more prolific advertising. This is making the future for many solid and reliable businesses – bleak.

Most owners believe that their choice is between an expensive supplier who will at least do the job properly and an inexpensive one that might cut a few corners – but our experience has shown that – although that scenario is often true – increasingly the complete opposite is also often true. It is possible to pay a lot for very mediocre work or pay quite modest amounts for extremely good workmanship.

We used to set our stall out to fit in between those options and to provide the quality and care that would normally be expected to be associated with the expensive supplier but at prices that are comparable with the less expensive end of the market. But – as we have moved up market to newer cars - we are beginning to realise that not only are we less expensive than most – but we also do a far better job – giving **DOUBLE THE BENEFIT** of the highest quality at very competitive prices. Furthermore suppliers that expect to lose customers as cars age - may well not worry too much about the consequences of that short cut workmanship – but our commitment to older cars and cost base maintains customers throughout the life of a car. We therefore have a vested interest in keeping the quality at the highest level at all times.

The protective trading practices of “main agents” and warranty clauses have previously handicapped independents from selling and servicing new cars. However recent European legislation is both challenging the monopoly supply of new models by main agents (resulting in some independents already offering brand new Porsche’s for sale) and ensuring

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that previously protective measures to keep secret both technical information and special tools – will not be tolerated. They intend to make sure that such technology must be opened up to independent service centres as well in future (and not before time).

However we feel that there will still be a tendency for owners of newer cars to want to preserve a “main agent service history” as they assume that it will influence re-sale value – so it is at this moment difficult to anticipate if and how that may change when more independents are supplying and servicing new cars.

We are still the only specialist offering a “Lifetime Maintenance Plan” that enables customers to pay for their future servicing needs by moderate monthly instalments while contributing a small amount to an “insurance type fund” to cover the future labour costs of not only anything that goes wrong with the car, but also anything that simply wears out or fails. This fantastic scheme enables those who may experience a serious problem to avoid huge labour costs because they are already covered under the scheme. It also means that – having prepared the car for sale – or having totally checked it over – we then share the consequences of any unexpected future failures, by carrying out the labour for any repairs at our costs.

No other specialist offers their own customers such a sincere demonstration of their commitment to their complete satisfaction. Furthermore – since any additional work necessary would be at our cost – no other specialist offers such a demonstration of their confidence in their own quality and workmanship – that their service and repair work or sales car preparation is so thorough - that such occurrences are negligible.

With the unique “Lifetime Maintenance Plan” having been so well received and with the vast majority of our sale cars returning to us for re-sale and remaining in our care for many years - there could be many advantages in looking after cars from new and throughout their whole life. So our future policy may well change to embrace all ages of cars – even new ones – in time. At present – despite the recent increase in capacity – we are still working flat out trying to cope with the demand for work on cars around 4 years old and older – so the ultimate decision is still under consideration.

One thing is certain (and will become more clear as this guide unfolds the unique differences between us and any other competitor) – that there is no better place to buy your Porsche from and no better place to have it serviced or repaired. Everything possible has been done to ensure that the time and facilities are available to carry out the work required in the most contentious way without the resulting costs becoming prohibitive and with the best and most comprehensive back up available anywhere supplied with the highest integrity by the most helpful and dedicated staff.

The differences between a PORSCHE and other sports cars.

If you are thinking of buying a Porsche over 3 to 5 years old, or arranging a service or repairs, then you are probably concerned to make sure that the source that you choose from will be fair and trustworthy and provide reliable and affordable services (in an industry with a very poor reputation). We understand your anxiety and have prepared this guide to help you make an informed choice.

It is very important to understand that a used Porsche is quite different to any similar Sports car and this fact contributes greatly to the widespread corruption and disappointment that is commonplace. Understanding these differences and the market is your best protection and this guide is designed to help you.

(1) A Porsche is designed as a Sports Car and not by a mass producer who uses standard parts – tuned up – or small manufacturers who have to buy in standard equipment, that was originally mass-produced for cost reasons. The quality of Porsche’s engineering and the resulting performance exceeds that of most competitors.

(2) Instead of using light gauge metals and flimsy interiors to reduce weight and gain performance, the engines are so powerful that they outperform their opposition despite their solid galvanised bodies and strong, well-made, long lasting, interiors.

(3) The resulting all round quality of used examples is so much better than other sports cars of similar age and mileage, that comparatively poor examples of Porsche’s will look and drive so well anyway that the uninitiated can often be fooled into paying a lot for a poor example.

(4) Many other sports cars deteriorate so much with age that the choices are often between a rough, tired, rusty example, for £2K, a refurbished example for £12K and a rebuilt as new example for £50K – a total difference of £48K for cars where even the inexperienced buyer can

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easily recognise the difference. By comparison a Porsche is so much better quality that the price difference may only be £3k between a poor and an excellent example and there will be no very rusty ones nor any that need to be completely refurbished as new either. This makes the condition of the car being bought, much more important but equally much more difficult to assess.

(5) Because the original Porsche engineering is of such high quality, and so sophisticated, the cost of parts and labour for repairs will however be significantly higher, so although the quality may always be generally good by comparison with other cars – this makes it not only more difficult to spot the difference between good and poor examples, but also much more expensive if you get it wrong. Because of this the only advice generally given by others is to obtain a “low mileage example with full service history” – the implication being that this will guarantee a good car – which it absolutely does not. This guide will explain in more detail, why the advice of so many others can be completely flawed and misleading and how it also enables many sellers to pass off poor cars for high prices to unsuspecting buyers. Briefly it is because:-

- a. The very quality that enables high mileage's to be covered reliably also can easily disguise a “clocked” car to anyone other than an expert.
- b. Service histories are frequently forged or when they are true, fail to warn of impending expensive repairs that even such high quality and reliable cars, as these still need from time to time.

So – unlike most Sports cars - these facts make it very difficult indeed to judge the value of a Porsche against, (a) it's mileage, (b) it's history, (c) it's age and (d) it's condition. All this provides the scope for all the bad practices that riddle the used Porsche market.

As our business has grown to include newer cars, we have found that our Hartech operation has proven just as important and valuable for models from 3 to 5 years old, as well. These have frequently reached a point where a thorough and detailed inspection reveals the beginning of problems that are best nipped in the bud but will then benefit the car for many years thereafter. For any Porsche over that age, your choice could therefore make the difference between owning and enjoying a superb Sports Car that fulfils all your desires economically and a very disappointing one resulting in disillusionment with the product or the industry with possibly huge costs incurred. The need for help in the Porsche market is therefore probably more necessary than for almost any similar alternative and the consequences more crucial.

This Guide, will make down to earth and practical comments on the most important aspects associated with Porsche ownership, the differences in the models and the types of businesses servicing their needs. It also explains in detail the special services provided by Hartech for comparison and how this protects the interests of its customers.

We have tried to make it as reader friendly as possible, but it is a large document in which we may re-emphasise or repeat some points again where they are extremely important, where we have found that customers continually make the same mistakes, despite previous warnings, or where they are crucial to explain another point. We believe that we need to be this thorough to achieve our objectives and to make sure that readers, who skip some sections, still receive the full impact of a relevant point or warning.

We believe that IF every Porsche owner has a good experience then that will ultimately help our future and if anyone has a bad experience, then that can harm our future - even if we had no involvement whatsoever in either situation. So we try our best to help everyone to have a good experience, regardless of them being or becoming a customer of ours or not, providing, printing and posting this guide at our cost, and making it available free of charge on the Internet, regardless of the outcome resulting in any direct income for ourselves or not.

We do not discredit our opposition by name (although such an exercise would often not prove difficult) but instead concentrate all our energies into what we can do for our customers, treating everyone with the same respect regardless of their budget, the age or value of their car or the likely outcome, providing a positive and friendly environment - with no sales pressure - to bring affordable Porsche ownership to as many prospective customers as possible.

The high quality and performance of the cars, makes buying one a very exciting experience, but encourages many to make impulsive choices that they later regret. Similarly the high profile involved enables many to be lured by flashy advertising or cheap prices, without proper comparison first. We are quite different. We will explain all about the cars, ownership, costs, prices, issues, choices and suitability, both good and bad. We will warn you about corruption, to protect you from the many foul practices and numerous bad cars that are widely available. When you are armed with that knowledge we will explain in detail what we can offer to help you, content that if you do turn to us you should have an enjoyable "Porsche" experience and if you don't, we should at least have helped you to avoid a bad choice elsewhere.

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When you compare our services with those of other Porsche specialists, you will find many making claims to carry out extensive pre-sales preparation or just claiming to be "the best" (without quantifying how or why), making it very difficult for you to decide upon the merits of these claims when you will not yet have experienced the outcome. We are different because we provide detailed proof of the advantages in running cost-savings and the reliability of a "Hartech Porsche" and back this up by offering a very low cost "Lifetime Maintenance Plan" (paid monthly by standing order), to cover the full costs of annual Mot's & services and the labour for almost all repairs, **for as long as you own the car** (including normal wear and tear items) and regardless of the mileage's you may eventually clock up. (E.g. typically from around £8/week for a 944 lux or around £9-£11/week for a 944 S2 or 993 – both @ 6000 miles/year – see page 46). This must be the first time that a Motor Trader has backed up their claims with such a positive provision that would cost them dear if their claims were exaggerated, or untrue.

The customer ultimately pays for a businesses costs. Although some competitors provide expensive showrooms and smart administrative staff, (that will ultimately be added to the cost of their cars or services), this extra comfort is only experienced at their premises, for an hour or two at most - whereas the quality of the car that you buy or the work done on your car, influences your enjoyment (and your pocket) for possibly many years. We therefore put our main efforts into the quality of our engineering facilities, our training, our workmanship, our cars, our record systems and our services, with a lower emphasis upon our premises, advertising and decor. Our efficient computerised management and customer records system, well equipped and spacious workshop (with no frills or unproductive staff) and modest advertising have achieved the lowest possible overheads and the best possible value for money with many new customers and car sales resulting from recommendations and referrals.

Many modern garage businesses, have high overheads and poor quality fitters - often resulting in even worse standards, and each job is strictly target timed, forcing constraints on fitters which would not suit the age and complexity of an older Porsche. We have provided a resource - more in the mould of the traditional garage - with staff trained as engineers who can identify problems and rectify them within a framework that gives them time (with no fixed or target times ever imposed) and excellent facilities to ensure the highest quality standards ideally suited to the needs of older Porsche's.

Where we differ from the traditional garage is in the highly efficient computerised management and records systems employed that enable us to operate efficiently

with few non productive staff while keeping excellent records that back up the planned maintenance work that preserves our customers cars so well and economically.

We have one of the largest and busiest workshops in the North of England whereas many of our Sales competitors have little or no workshop facilities (although some have admittedly introduced them recently to try to counter our success) but they have huge advertising budgets. By contrast, our extensive workshop experience greatly assists us to select and prepare cars to the highest standards and to look after them effectively thereafter. So if flashy showrooms, large adverts and exaggerated claims **do not impress you** and the quality of the work, cars, customer service and affordable costs are your prime concern, then you will probably be very happy and comfortable with Hartech Automotive and already be "our kind of customer".

In order to work out a fair cost for our revolutionary **Lifetime Maintenance Plan**, we have analysed the records going back 6 years to compare the typical running costs of Hartech Porsche's with the many non-Hartech Porsche's that we look after (see page 49) and these results prove absolutely that the benefits of buying a Hartech Porsche are not only the reassurance that it has been researched and is genuine, is straight and in exceptional condition, the pleasure from owning and driving a superb example, the friendly and straight forward help you receive in looking after your car and the enhanced enjoyment resulting, but there are also huge financial savings overall.

Having consolidated this in our **Lifetime Maintenance Plan**, we believe that we are unique in providing exceptional older Porsches in superb condition, with unrivalled support services and our extremely high customer retention rate results from this and the quality of our work and our total commitment to after sales service.

Our aim is to provide the **BEST POSSIBLE TOTAL CUSTOMER CARE PACKAGE** available for the "older" PORSCHE models.

In time we may expand this aim to also embrace new or nearly new Porsche cars or we may decide to consolidate our previous success by continuing with our previously successful formula. Whatever we decide, we will never increase our cost base so that it excludes work on older Porsche's whatever their problems.

Our continued growth and success results from just how well we supply the market with it's needs, providing the best and most affordable services for discerning customers everywhere. **How do we do this?**

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(1) HARTECH SALE CARS

We are well known for seeking out the best cars Nationally – but what do we mean by “best”. Well – unlike some competitors – we do not advise you to buy a mechanically sound car if it is in an unpopular colour. We only buy cars that we believe will always have popular specifications and colours – so that their re-sale value is preserved. We then check their history with hpi and the National Mileage register, service them thoroughly and check them over, rectifying faults and returning them to the best possible condition for re-sale. They are guaranteed and our **Lifetime Maintenance Plan** minimises rectification costs if hidden problems later emerge. Comprehensive computer records assist in future diagnosis, preserving the integrity of the car and its history while a huge spares stock (including engines, gearboxes, interiors, new, reconditioned and used parts) represents typical customer commitment.

This care and attention results in our customers enjoying their Porsche experience for many years and many thousands of miles, finally achieving good re-sale values, while a very high proportion part exchange their original Porsche for a newer model - continuing the "**Hartech**" experience. We provide a good car that will give a pleasurable and affordable experience and command a high re-sale value.

(2) CUSTOMER CARS (bought by them elsewhere)

It's a free Country and we don't mind if cars are purchased elsewhere. In any case there is a limit to the number of good cars available and if we sold any more we would find it hard to source their replacements. We are therefore still perfectly happy to look after cars purchased elsewhere (even from our competitors) and care for them to the best of our ability. Indeed our care and attention results in customer cars being looked after to the very highest standards while our low overheads minimise costs. Cars that we have not seen before, are accepted with our top "C" service (see page 55) covering the whole car, providing a comprehensive computerised report detailing (and prioritising) future work requirements and costs, enabling proper planned maintenance to be followed.

So confident are we about our ability to look after a customer car economically, that we have now introduced a version of our “Lifetime Maintenance Plan” to suit them as well by following the recommendations of our “C” service first and then accepting them onto the scheme (see page 46-7 for full details). Our own machine shop enables us to manufacture special jigs and fixtures, re-machine-damaged components, refurbishment worn out parts and manufacture new ones.

We have extensive support equipment including Imperial and Metric micrometers, all the necessary workshop manuals, Bosch Hammer, four-gas analyser, laser wheel alignment, dynamometer, computerised diagnostics etc. This enables us to carry out accurate inspection, measurement, diagnosis and remedial action.

We are not infallible and if and when an unexpected or completely unpredictable problem occurs, we are always there to help our customer and support them in their time of need. As a result, personal recommendations alone now account for most of our new business.

When we started many years ago, the public were largely unaware of the high proportion of “dodgy” cars being advertised by unscrupulous dealers and so we devoted most of our first buyer's guides to exposing corruption in our industry and the consequences for those seeking to own a used Porsche. We provided endless facts and figures to substantiate our claims about clocked and crashed cars, examples of the typical high costs of renovating cars bought by customers elsewhere (then between £1500 and £2000), pointed out what to look out for and – in contrast – provided proof of the extensive work done by ourselves during sales selection and preparation and the resulting success etc.

Now, with typical industry corruption widely publicised by the media and our reputation having been firmly established by our long term customers and the quality of our cars, we need less emphasis on these areas and have replaced that content in the original buyers guide, by more information about the cars and the far greater model range and services that we now cover.

Hartech and its Competitors. In the last few years several competitors have emerged with expensive advertising and competitive prices, but many of these have gone out of business while others have remained static. Often their advertising budget is 5 to 10 times as large as ours for a much smaller turnover - perhaps reflecting our success at repeat business and customer loyalty. Authorised Porsche Outlets are another alternative but also cater for customers of brand new (and very expensive) cars as well, which inevitably influences their cost structure and general provisions.

Logically it is an inescapable fact that the older a car is and the more miles it has covered, then the more repairs it is likely to need. It is also inescapable that as engines, steering, brakes and transmissions wear, the repairs become more labour intensive (if original parts are to be reconditioned) or more expensive (if new parts are offered instead of reconditioning). As a result we are often offered cars to buy that we cannot renovate economically any

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more (regardless of the low price offered) while the cost of renovating older cars brought to us by customers buying them elsewhere is now growing to often exceed £3000.

This is a viscous circle, for as the age of the car increases and the prices reduce, that the typical owner of such an older Porsche will be less able to afford the type of repairs increasingly necessary, (especially if they are catered for at a place set up to sell and maintain Newer Porsche's). So while owners of newer cars experience lower maintenance costs they incur higher depreciation while the owners of older cars suffer little or no depreciation but potentially increased repair costs. This makes the cost structure, efficiency and integrity of competitors increasingly relevant as cars age.

There are also some sole traders offering services which are reasonably priced (due to their low cost or non existent premises etc), but they do not offer the same capacity, flexibility or back up systems and are unlikely to match the insurance cover that we provide to protect our customers. It is also a concern what the situation would be if a vehicle was stolen, damaged or a total loss while in the care of such traders on their own property or unofficial workshops and how third party public liability claims would be handled or how house insurers would view responsibility for a house burned down while being worked on by someone else, in the owners garage - for example.

Sole Traders also cannot match the sheer volume of cars that we see and therefore our experience of solving and detecting problems early. They also cannot match our resources for spares supply nor our purchasing power (that enables us to provide low cost spares and to manufacture special parts in economic batches). Finally they are less able to guarantee continuity in the event of staff illness or unforeseen personal problems.

Although there are alternatives with quite large set ups, because we specifically set up our business to only cater for older Porsche's, we have a completely different way of working with them, different facilities and even different qualities in our staff, all within a lower overhead structure that makes our approach affordable and we believe much more suitable to the age of cars and their associated problems. Furthermore the owner of an older Porsche has traditionally been our only (and most valuable) customer and has been treated accordingly. We therefore treat everyone with the same respect regardless of the age of their car or the budgets they can afford.

Unfortunately, (as previously mentioned) if the cost of repairs and refurbishment increases with age yet the value of an average car is lower, then those repair costs can

eventually exceed the value of the car, making some models too expensive for us to buy and refurbish for a price that seems reasonable. As a result, we presently sell cars from 5 to 15 years old and move up each year accordingly, introducing new models as we go and dropping the oldest - as appropriate. However we still service and repair all Porsche's – however old.

Independent “Porsche trained Technicians”. There are a number of ex-Porsche trained technicians (who advertise that fact) running their own independent Porsche businesses. They were no doubt originally carefully selected and well trained, so this seems like quite a good recommendation (and many are very good technicians and have built and run very successful businesses). We have no wish to criticise those who do a good job (and there are many in this category). However, we feel that it is also quite right – in the context of the advice in this guide - to point out that the original training alone may not necessarily be a reliable guide to the quality or value of their independent service provision.

They were after all; originally trained by others into the skills they possess. However - since most of their training was conducted several years ago - it often does not apply to current or even recent models. It is also likely that models that were current then were too new to require extensive work or to incur age or high mileage related problems for which there may have been little or no training anyway (and certainly little experience). This means that sooner or later they will have had to become self-taught and self trained – often requiring quite different background skills and experiences. Although some succeed we feel that ex “Porsche trained” may not automatically be as significant as might be expected.

Perhaps more importantly, even when the business remains small - they then have to become business owners, managers, salesmen, accounts clerks etc – as there is much more to running a successful private business - than is necessarily provided by being trained as a technician. Furthermore to grow the business to a size that can compete with spares purchasing power and stock availability, has sufficient capacity and is both affordable and efficient etc. also requires skills in business development, financial management, financial resources, marketing etc. So, being trained as a Porsche technician does not necessarily reflect business acumen, business management skills or even guarantee integrity. Having made that valid point we would like to repeat that this in no way implies any global criticism of all ex-Porsche trained technicians – many of whom provide an excellent service.

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General Independent Traders

There are also several independent specialists that are not Porsche trained but provide an excellent service. In many cases the type of training or even self-learning that they undertook, actually benefits their approach towards running and developing a business facing new problems and models continuously – without factory support. Similarly their very independence often results in more willingness to find non-Porsche solutions to common problems that are often more cost effective at the lower end of the market. Unfortunately there are also a lot of very poor quality provisions as well, over which no control is currently exercised to investigate quality or to protect the public. This makes it very difficult for the public to decide which provision to use.

We feel that some controls would benefit the public. It seems to us that IF it is a fact of life that some good independent organisations have a legitimate role to play in the Porsche market, then providing some guidance (or even control) by perhaps a star rating (for example) would at least add clarity to a grey area.

It could (for example) be used to assess facilities, training, competence, liability insurance, customer satisfaction surveys etc. So far the public are left to choose between often flashy advertising and more modest but good quality organisations. The lack of any controls creates huge difficulties because those with comparatively low customer loyalty need bigger advertising budgets to sustain the business – appearing a good choice to the uninitiated using magazines or the Internet to select their source. If they are mainly interested in sales then a high advertising budget will attract business and as they have little or no interest in long term back up support, their business is sustainable even when buyers realise later that they have made a poor choice. In contrast - those who are very busy through high repeat business have to limit advertising to avoid over-trading and may appear less attractive to new prospective customers – by comparison. These valid points re-emphasises how difficult it is for someone new to the Porsche experience to select a suitable service provider.

Our best advice is not to necessarily be put off if an organisation is not full of ex-Porsche trained technicians. Since most independent organisations cater for older cars (with lower overhead rates etc) - the skills necessary to maintain these cars often require a broader automotive engineering background, a wider range of skills and a completely different training and management style. For example, all our staff are trained as automotive engineers in their approach (to be able to analyse the consequences of corrosion, wear rates, oil leaks and particularly age

related design faults etc). They need to address every car as a challenge to achieve the optimum quality outcome at the minimal cost and they operate with no target or bonus times by having a low enough overhead recovery rate to allow the staff to concentrate 100% upon the customer's car and the quality of the job they do as the first priority.

Having tailored our business specifically to cater for the needs of Porsche cars over 5 years old (and their owners), it is not surprising that we handle more cars of this age than any local competitors. We are more used to associated problems, rebuilding engines and gearboxes, fitting good quality used parts (where appropriate) and often less expensive parts as well, like our replacement wishbones (at roughly half new price). Our small engineering workshop enables us to undertake low cost modifications to some parts, which are only viable in our type of set up and are much more suitable for this age of car. The sheer volume of cars that we see greatly assists us in detecting trends early and providing timely solutions, which smaller businesses could not possibly achieve. Modern cars also require considerable investment in computerised diagnostic systems – often essential to maintain correct running and re-programming. Probably only large (or expensive small) operations could justify the costs increasingly involved. There are a number of other similar operations around the Country, but picking the right ones to deal with is still difficult for the uninitiated.

As we have gradually moved up market to cater for newer and more expensive models, we assumed that we would reach a point where typical owners would prefer to pay the higher charges associated with more luxurious competitors. Ironically that hasn't been the case and it seems that – some at least – value the way we operate and the integrity of our operation higher than they do the more luxurious décor and environment elsewhere. It seems that – in our attempts to provide services for older cars and more impecunious owners – we may have innocently come up with a formula that equally applies to all Porsche owners – regardless of their wealth or the newness of their car. So although we were originally set up to cater for the needs of older Porsche's and their owners, we have continuously grown to handle more customers and a bigger age range of cars with more comprehensive facilities dedicated to them, in our segment of the market, than any known opposition. This has only been achieved by providing the facilities and staff, suitably trained to satisfy the particular needs of an ever growing satisfied customer base and by keeping and nurturing customers by providing the services they need at prices they can afford - hence our slogan.

"WE CARE FOR YOUR PORSCHE"

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Introduction to the Range

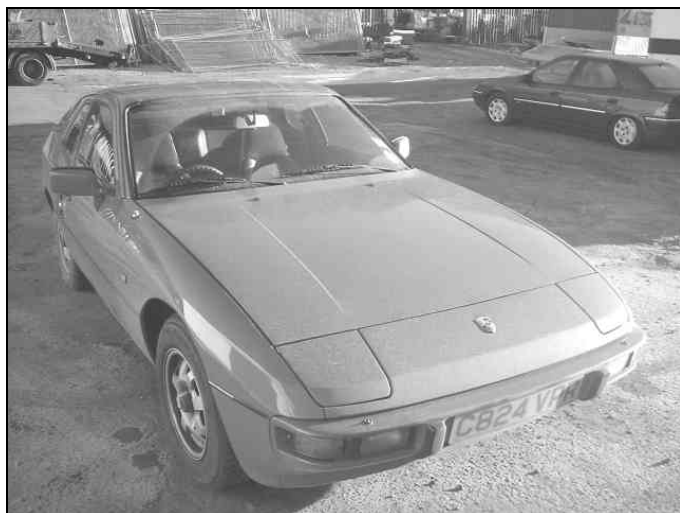
The Porsche 924, 928, 944, 968, 911 (including the 964, 993 & 996) and the Boxster, represents excellent value for money. Since the first 911 over thirty years ago and the 924, over twenty years ago, the basic designs have proved successful, competitive, and long lasting. As a result good cars are always in demand, with nice older examples holding their value or appreciating at present - but becoming increasingly rare. They keep their looks, style, and general appearance inside and outside, maintaining exceptional performance and superb handling even after many years and thousands of miles, while preserving an unrivalled ability to turn heads and invoke desire in a way unique to the marque.

Classic car insurance can often provide inexpensive comprehensive cover over 10 years old and this combined with modest maintenance costs enables the ownership of some of the finest sports cars in the World to reach even modest budgets.

Since 1976 (911) and 1982 (924 & 944) all chassis' used galvanised steel, providing the legendary appearance and structural integrity that enables them to outlast most other cars mechanically. When they do need parts or maintenance, the costs can then be quite high but the repairs are long lasting again. Consequently, if they are properly looked after, running costs are very reasonable taken as an overall picture. Unfortunately neglect in some areas can prove very expensive, especially for the owner at the time when the major work is required, or the next owner who bought a car - which has been sold precisely because expensive repairs are looming.

General impressions of the cars.

924 (2 litre, 4 cyl, 8 valve).



Despite originating from a design for Volkswagen, the 924 has been recognised as a truly excellent sports car in its own right. They are economical tourers, with adequate acceleration reaching 125 miles per hour. Despite the brakes being solid discs (front) and drums (rear), the braking is quite good. The 50-50-weight distribution provides exceptional handling allowing many 924's to compete favourably with much more powerful 911's at track events.

With rear seats (for under 12's) and practical rear luggage space, the car is ideally suitable as a first Porsche for those with small budgets. Being inexpensive, even quite poor cars will find buyers on the private market, which makes it increasingly difficult for reputable dealers to address all the preparation work for sale and have a competitive price. So most cars are bought privately or are in excellent condition, but are expensive with growing values.

Engines are remarkably reliable and can cover well over 250 thousand miles. Cylinder head gaskets can leak at the rear of the cylinder block, (revealed as a misfire when cold) and are an expensive but long lasting repair. Exhaust studs also fail and often require head removal. The various electrical and temperature devices influencing the fuel injection system - can also play up. Although the parts can be inexpensive to buy, faults can be quite expensive to trace and repair. Air hoses frequently split and cause bad running or starting. All 924's are prone to poor hot starting - but can be improved with our own hot start kit.

The 924 does not have blistering acceleration and by modern standards is quite slow off the mark (see performance comparison chart page 58) although it is great fun and better than many similar cars of the era. Clutches are operated by cable and can be quite heavy particularly for ladies to use. Similarly there are very few available with power steering which can be heavy. Although they are relatively inexpensive to buy - they cost just as much to repair and being older than average, it is easy to spend too much bringing them up to scratch especially since their lower value often results in less care. Despite these few faults they have extremely robust engines with considerable life spans. Most repairs are straightforward and could be carried out by the home mechanic quite successfully. A Haynes manual is available giving step-by-step guidelines to most repairs.

924 Turbo (2 litre, 4 cyl, 8 valve). This car is very much the Jekyll and Hyde of the water-cooled Porsche range, capable of 145mph performance with a huge surge of power evident when the turbo charger cuts in, putting it in the weekend fun machine category rather than a practical all round sports car. The Mark1 version is prone to breather problems and smoking on acceleration. The Mk2

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had digital ignition and more torque. Due to corrosion, they can prove very expensive to work on in exhaust manifold, turbo charger or waste gate areas, so engine rebuilds are expensive and time consuming but thankfully then last many years again. It can be difficult and tiring to drive in traffic and the dogleg gearbox is a little clumsy and prone to synchromesh problems on first and second gear. Performance relative to cost is phenomenal. Brakes and suspension were developed into the 944, well up to coping with the performance providing a very fast Porsche inexpensive to buy but potentially expensive to repair. The Carrera GT version, (with wider 944 track, wheel arches and increased performance) is exceptional with limited production making it desirable collectors items.

928. (8 and 16 valve V8). These are very luxurious, quick and dependable, with good handling and exceptional specifications. They incorporate a considerable number of electronic controls with later cars having digital instruments and memory seats etc. They are grand tourers very much in the mould of a big Jaguar sports car and will effortlessly cover huge mileages, ideal for motorway journeys or European travel. Engines are like a V8 made from two 944, 4 cylinder engines, the early ones up to S2's being 2 valve heads (16 in all) and the later S4's being 4 valve heads (32 in all). They are consequently quite heavy and are prone to all the same weaknesses and problems associated with the 944S range except that there are twice as many parts to replace or repair if needed.

Although they are very reliable - as they age - expensive engine repairs may become necessary, which due to the lazy power available, may not be easy to notice until more serious damage has occurred. The big engine and double wishbone suspension renders the front feeling heavy despite power steering. The manual versions seem badly matched to the weight of the car and the inertia of the engine causes lurching when changing gear, with most owners consequently preferring automatics.

The combination of high weight, low fuel economy and the cost of honouring our warranties if a serious fault ever occurred, have made us reluctant to sell older models. Newer, lower mileage S4's could be OK but will eventually suffer the same problems as the other 16 valve engines, (camshafts and chains etc) but there are twice as many components to replace, hence twice the cost.

For all these reasons we are not great lovers of this car as they are expensive to maintain (as they age), heavy and thirsty and seem quite different to any other Porsche model that combines lightweight and performance.

Pre 1986 944 (2.5 litre, 4 cyl, 8 valve). The early 944 overcame most of the disadvantages of both the 924 and the 924 turbo. The lightweight hydraulic clutch, and better torque from the engine at low speed, was such an improvement, that the cars became easier to drive and faster than the normal 924 with more aggressive styling. Although not as fast as a 924 turbo in top speed, nevertheless the 944 could cover ground in most situations more quickly due to smoother power delivery and wider torque. Although the automatic version of the 924 is abysmally slow, the 944 automatic, due to its increased low speed torque, can be quite an acceptable sports car for those restricted to automatic choices (although with only three speeds it is slow overtaking at around 40 mph).

Perhaps the only drawback with these earlier models is that very few of them have power steering, and with the wider wheel track and wheel rims, the steering can become even heavier than a 924. They can be bought cheaply now but being quite old they suffer from lack of maintenance and can prove moderately expensive to return to good condition. Prices for a nice one from a reputable dealer who has already carried out all the work necessary are therefore significantly higher than for a private sale.

In late 1984/1985 (the last year of production), most of the cars featured an electric sunroof and power steering, and became probably the best examples available of the pre-curved dash car.

Picture of 944 Early Type Dashboard



The early dashboard is prone to cracking due to differential expansion caused by sunlight and heat. It is rarely economical to replace but can be improved by specialists.

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924S (2.5 litre, 4 cyl, 8 valve).



This model came about by fitting the 944 engine, gearbox and brakes, into the narrower 924 chassis design and shape.

Often referred to as a 924 with a 944 engine, it would more realistically be described as a 944 with the wheels moved in board about one inch (25 mm), and the bulges on the bodywork smoothed out, since everything else about the car is more similar to the square dash board 944 than the original 924.

One difference is that the older 944 can have quite harsh suspension, but the 924S suspension is much softer and forgiving, therefore providing a car every bit as fast as the 944, more comfortable to drive, with softer suspension characteristics and less aggressive styling.

Many were bought by ladies and were well cared for and not abused, so the general condition, for a given age and mileage can often be better than a 944.

When they were first built they proved so fast (compared to the more expensive 944 of the era) that it seems that attempts were made to slow the model down by fitting it with low compression pistons. The changes to unleaded fuel since have now rendered this a happy coincidence as this model will run on any unleaded fuel, while a later 924S has higher compression (and can be faster than a comparative 944). As a result it is no surprise that it has become a successful racing model and possibly the best value for money buy of the whole range.

The slightly narrower wheels make the steering easier (even without optional power steering). Despite being manufactured until 1988, they still only had the instruments, heating and interiors fitted to pre 1986 "square dash board" 944's.

Post 1985 curved dashboard 944. (2.5 and 2.7 litre, 4 cyl, 8 valve).



This model has always been in great demand, and all qualify for classic car insurance. They incorporated many refinements over the already successful 944, mainly in the suspension, dashboard layout (see picture on page 16), instrumentation, heating, ventilating, engine management systems, electrical height adjustment on the drivers seat and all models have power steering.

Being in manufacture and available up to 1988, a private number plate can obscure the true age of the car, providing a vehicle with superb performance, modern appearance, and indeterminate age.

Like the 911 range - now that these cars are sought after - the price for a nice one is very much higher than for a similar one of the same age in poorer condition. In fact all the demand is for nice cars and rough ones are not only difficult for owners to sell but can be neither viable to renovate nor attractive to collectors.

This is very much a model to buy the best available and enjoy ownership while popularity remains high, anticipating continued demand for many years - eventually enjoying Classic car status.

The 2.7 litre model (some F and most G Reg.) was the last of the normally aspirated 8 valve cars and featured ABS and several other internal engine changes that render the model the best in the range.

A charming and well behaved Porsche, easily affordable yet with excellent performance and handling - capable of lasting almost for ever and with a dedicated following.

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The curved dashboard 944 interior fitted to all 944 range (including the turbo, S2 and the 968)



Overall this model has very few faults but most owners sell when problems are looming and typically they may need a clutch, brakes, a head gasket or a water pump etc, when bought - with small faults to the electrics common but relatively easily repaired.

944 Turbo (2.5 litre, 4 cyl, 8 valve).



With appearance likened to the exciting and original 924 Carrera GT, and later taken up by the 944S2, the 944 turbo represents a modern looking car with absolutely fantastic performance - increasingly rare and always in demand. With all the benefits of the curved dash 944, and often ABS as well, they do not suffer the delay in providing power to 3500 rpm of the 924 turbo, pulling well from 2000 rpm and the power delivery is much smoother and higher.

Although anyone buying one of these cars and using its performance to the full, must be a capable driver used to high speed, if they are driven without heavy use of the throttle pedal, they are surprisingly smooth, quiet, safe and

quite sedate, more like a quality saloon than a sports car. They can therefore be ideal for two drivers sharing, where one drives modestly and is inexperienced with performance sports cars and another drives more aggressively, for whom little will ever out perform it.

They are comfortable in heavy slow traffic as well as really scintillating on the open road, thus easily fulfilling a dual role. The 220 bhp Turbo is very smooth and fast and a fine grand-tourer being very well balanced. The 250 bhp Turbo is a little quicker and can be deceptively fast. Both can be tuned up without much loss of reliability. Even in standard form they can still outrun a 968 Coupe.

Despite the much - improved performance resulting from the inclusion of a turbo charger, the reliability of the engines is extraordinarily high (apart from minor problems with the waste gate, or cycling valve) and huge mileages with high reliability are commonplace.

We rarely have had to replace a worn out turbocharger and because it pumps basically too much air into the engine (and bleeds the excess away though the waste gate) - turbo's seem to always perform the same even after many years and miles and are probably the most reliable in the whole range

Like all high performance Porsches, they need to be properly maintained, but maintenance costs are only a little higher than with the standard 944, despite the complication of the turbo charging system. The brakes are also different, having aluminium callipers, which seize up and need frequent attention (often expensive). In conclusion this car is not for the faint hearted, and is a lot faster than the impression provided to the unfamiliar driver. Consequently many of them have had front-end crashes, with numerous examples recorded as having had major accident damage. Indeed it's very difficult to buy a 944 turbo that hasn't been bumped at some time in its life but if a straight one is found it is very valuable.

944S (2.5 litre, 4 cyl, 16 valve). The 944 S differed from the 8-valve single overhead camshaft standard 944 by being fitted with a double overhead camshaft and 16 valves resulting in a claimed extra 25 to 30 bhp. Although still only 2.5 litre - properly set up - it is comparable to the standard 8 valve 944 with different power characteristics and is technically more interesting. At about the time that this engine was developed, many other manufacturers also brought out their first multi valve engines. Many had poor bottom end power and it took some years before the industry learned how to produce torque and brake horsepower across a wide range for 4 valve cylinder heads. Porsche's 1st 16-valve engine was no different and many examples, despite being fast when revved high,

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exhibit disappointing bottom end power (often exacerbated by inaccurate camshaft timing).

Some customers (for whom speed is not important) prefer this engine as the power increases with the revs and provides a smooth and progressive drive. However, this was also one of the first engines that it was expected never to need tuning (other than by what the engine management system could achieve).

Unfortunately, with age, general engine wear and carbon deposits have in some cases moved the control parameters outside of the scope of the tiring engine management system resulting in problems starting and with an erratic tickover (especially from cold) - lowering popularity.

These problems are not exhibited in all examples and now that they are older, we come across - some that perform very well indeed and are well worth buying and others that seem to have lost something that is impossible to get back. This may be caused by a self-learning computer control element going out of range in some examples. These potential problems were largely remedied in the S2 catalyst engine that superseded it by enabling re-programming to re-set control parameters.

Unlike other models in the range, the cam belt on the 944S (and the S2 and 968) only drives one camshaft. Half way down this camshaft an integral sprocket drives the second camshaft through a chain and hydraulic tensioner. Unfortunately - although most owners realise that they need to change cam belts regularly - it seems that there has been insufficient attention raised about the need to change the camshaft chain & tensioner runners on these models, which can result in serious engine failure at around 85 to 120K miles costing anything up to £5000 to repair.

Although it may be possible to replace the chain before it snaps, the wear on the sprockets (caused by leaving it too late) often requires these to be replaced as well (or the new chain will soon break the worn teeth) and as the sprockets are part of the camshafts, it is expensive. While the cost of this replacement (if needed) is regarded as well worth while with the S2 and 968 (due to the overall outstanding performance and reliability resulting) the comparatively modest performance of the 944 S and occasional temperamental behaviour of some examples has put off some potential owners from what can otherwise be a very interesting classic that can be reasonably priced. As a result they may be available privately at modest prices (enabling the remedial work necessary to be afforded) and can therefore offer value for money.

Typical broken camshaft sprocket teeth shown below.



Valve springs may also fail over 130K miles and as head gaskets may fail after about 10 years it is a sensible precaution on older and higher mileage cars to have all the above checked and replaced as necessary (including S2's and 968's) because despite this worrying weak spot, once the necessary parts are replaced (at a cost typically between £600 and £1500), the engines are then amongst the most reliable and cover enormous mileage's. Properly maintained they are, smooth and economical and include anti knock sensors to protect against low octane fuel and detonation/pre-ignition/pinking – particularly relevant with recent changes to unleaded fuel.

944S2 (3.0 litre, 4 cyl, 16 valve).



When Porsche changed the styling of the 944S to mirror the 944 Turbo, used its brakes and increased the engine size to 3 litres (making the S2) - they transformed both the looks and performance. With similar power to the 220 bhp 944 Turbo, but no turbo lag, they provided a very torquey gutsy feeling engine that improved all round performance

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to turbo levels. They can be exceptionally reliable and good performers with quite different characteristics to the turbo, each suiting different drivers depending upon their driving style and needs. Good examples are always in demand. With more responsive power than a 220 bhp Turbo and slightly better torque low down than the 250 bhp Turbo, the result is a very fast engine without turbo lag and similar immediate throttle response to a 911.

944S2 Engine.



The engines seem to have the potential to cover at least 250,000 miles while still performing like new (apart from the camshaft drive problems referred to previously on the 944S). The brakes can need moderately expensive attention quite regularly, however compared to the performance, the necessary preventative maintenance is inexpensive and the resulting product absolutely superb.

968 (3.0 litre, 4 cyl, 16 valve).

This model was the final development of the original 924 and is based upon the 944S2 with several significant changes. It was re-styled to incorporate some more modern 911 styling features (very similar the more recent 993) and the S2 based engine received a variable inlet camshaft-timing device to further increase mid range torque. Gearboxes were available in 4 speed-tiptronic and 6 speed manual versions.

Two versions were originally made available, the luxurious 968 and the contrasting light but somewhat crudely appointed Club Sport. Later a demand grew for a compromise between the two versions and the Sport version was listed, usually with a mixture of the best specifications of the other two. The Sport typically had 17-inch wheels (as originally fitted to the Club Sport and a favourite upgrade requested on many older 944's) and usually had electric windows and mirrors, adjustable seats

and a sunroof. The modern looks and outstanding performance of these practical sports cars combined with the small number manufactured have increased demand and prices remain exceptionally high. With, great looks, brilliant performance and exceptional reliability, they may well enjoy cult status in the future.

The 968 Sport.



It has a superb engine, similar to the S2 with improved torque. It still has potential problems with camshafts, belts and chains, (similar problems with 944S and S2). These will probably materialise after higher miles still (except perhaps for the Club Sport, which will usually have had a harder life and are often in poor condition) and these minor problems are easily avoided with proper maintenance and timely replacement parts.

There were also a few detailed changes in specification to the S2 that didn't really improve this model as much as expected. We have noticed many examples where the new fully automatic camshaft belt tensioner is on the verge of failing (through having become fully extended or seized to the pivot shaft or undoing the pivot pin which then fails through metal fatigue) which could cause serious engine damage. Fortunately the problem is avoidable with proper maintenance and attention to those areas

In an attempt to reduce the cost of replacing the expensive rubber damped clutch on the previous models, a dual mass flywheel was fitted instead (as had been reasonably successfully achieved with the later 911's). However - perhaps due to the less smooth power delivery from a 4 cylinder engine and greater individual power pulses (compared to a 6 cylinder 911) they do seem to start failing quite early in their life, causing a slight vibration on tickover and eventual rough power delivery. However, if this is ok, then clutch replacement is much less expensive and quick to achieve. Dual mass flywheels can be sourced at reasonable prices - if needed.

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The 924S, 944 & 968 Engine range. As these have similar components and problems they are listed here generally to cover all models. They provide very robust engines provide superb power delivery, and long life. Failures are usually avoidable without huge expense and are predictable in most cases (following inspection by an expert), but failure in any one of the engine components can be expensive to repair and is best avoided. The engines are capable of well over 250 thousand miles (with proper maintenance), although with neglect they can suffer damage at anything above 50 thousand miles. The key is to allow an expert to carry out a few simple checks, which will reveal the condition of the engine – reliably. The main problems (which are quite rare or only occur after perhaps 80 to 120,000 miles) are: - **Cam belts.** The cam belt and balance shaft belt, although inexpensive to replace, once snapped can cause the valves to hit the pistons and this can result in the whole engine being lost. They should be checked during each service (replacements should be undertaken at least every 45 thousand miles). The rollers (and water pump pulley) around which the belts travel, are not externally lubricated but have sealed for life bearings and if these fail they can cause a perfectly good belt to snap with the resulting serious damage previously mentioned. A full investigation of these components should take place with any car that is new to the buyer and is as important as checking or changing the belts.

Oil cooler. The oil cooler in pre '89 and non-turbo engines is not an air-cooled system as with most high performance cars, but is like a small radiator fitted inside the main water jacket of the cylinder block. On earlier models, they were connected by red seals, which have a limited life and eventually leak. Replacement green seals have a much longer life. If they leak they enable oil under pressure to be passed into the water-cooling system as a brown sludge with serious damage to the engine a resulting possibility.

Head Gasket. As these all aluminium water cooled engines heat up and cool down the continual expanding and contracting, compresses the head gasket until after many years it can fail. This is usually noticeable by the car running hotter than normal, the level in the header tank always being at the low level and excessive pressure in the top hose. Left unattended, these faults can become serious.

Tappets. Light tappet ticking noises are not necessarily a problem and can happily be ignored providing they are not excessive (and sometimes the noise that sound like tappets actually emanates from the fuel injectors anyway). The 944, 2.7 models - seem to reach the point of ticking sooner due to increased - tappet to housing wear rates caused by the higher lift camshaft lobes.

Piston Ring Wear. The aluminium cylinder blocks on these cars do not have cast iron liners. Although the silicon nitrides that are cast in the mix provide a superb lubricating surface and long life to pistons, some pre '87 944/924S models (and many 911, 3.2 Carrera's) can wear out rings prematurely. This can put a deep score in the cylinder bore to cause it to be scrapped. If the engine on one of these models smokes badly on heavy acceleration at high revs, then the piston rings are probably nearing the end of their useful life. If this is left unattended they can break up into small pieces eventually turning and wrecking the cylinder bores. A puff of smoke when changing gear is commonly caused by old valve guide seals and is not necessarily serious.

Vibrations & Engine Mountings. There are four typical sources of vibration on the 944 (including the S, S2, Turbo and 968) engine. One is that the balance shaft belt has snapped, giving a fine vibration at low revs - up to about 2000 rpm. Clutch cush drive problems can cause vibrations throughout the whole rev range. A worn out - off side - engine mounting results in a harsh vibration on tick over which goes away with revs. The most common is caused by incorrectly fitting the balance shaft pulleys and inadvertently miss-timing the shafts.

911 (2 litre to 3.2 litre, 6 cyl to 1989). These 911's are completely different cars to the typical 944/968 range, for a different market. Being more noisy and less comfortable, with less sure footed handling, and a more old fashioned interior and driving position, they nevertheless do have a unique character and presence all of their own and consequently have a huge following. They are exceptionally exciting to drive. However, we have found it is usually uneconomic to prepare for sale, pre '83 models to our usual standards. We do not offer a full renovation service for very neglected - older examples because they occupy too much workshop space for too long. It will prove very difficult for a private buyer to find a reasonably priced, reliable pre 1987 911 that is not hiding expensive faults.

Although it was built to very high quality standards, it's very success held back it's modernisation and although it was probably the fastest and most exiting sports car of it's era, it does now seem quite old fashioned in it's interior and lack of extras. Never the less it does have a unique character and presence all of it's own. It provides even more image than a 944, seems more thrilling to drive but due to it's comfort shortcomings, it is probably more suited to occasional use and short journeys for those who can use something else for day to day use and the 911 for special occasions. This aside, the 911's thrilling engine note, 1st gear acceleration and head turning potential is second to none.

HARTECH AUTOMOTIVE

1979 911 SC 3.0 Litre Targa



Early 1970's models were surprisingly fast and light giving excellent first gear acceleration and the drive and the sound of that superb 6 cylinder engine combined with the light weight and steering provides a unique experience that is always thrilling and satisfying. The later 3.2 Carrera did take a big step forward in beginning to modernise the interior and the fuel and engine management systems. The light hydraulic clutch and the G50 gearbox fitted in 1987, brought this version closest to being an acceptable drive by modern standards, but the performance of all models over the years, right from the 2 litre to the 3.2, was quite similar as gradual refinement increased the weight and increasing demands on emissions reduction required bigger engines but with gradually improving performance.

The 911 engine has long been established as a powerful and reliable unit with good power to weight ratio and torque performance. Although older 911's tend to be used quite infrequently (which usually renders the engine internals comparatively unworn), the air cooling ducts and the integral oil cooler tends to clog with debris, while there are numerous places for oil seals to shrink with age and for oil to leak out.

Having a dry sump - some cars can - if left standing - fill the crankcases with oil causing smoking on firing up and causing oil to bypass the rings and fill up the exhaust system - but it can burn off with use. Initial smoking is therefore not always a sign of a badly worn out engine.

The heat exchangers are notoriously vulnerable and potentially dangerous and many sellers disconnect the air feed into the cockpit to disguise a fault by preventing fumes filling the inside of the car. Providing seals and gaskets are changed when needed and care taken re-setting the cam chain tensioners and positions, the engines will satisfy occasional use with moderate performance.

It is not uncommon to break a cylinder head stud on a 3.0 litre engine requiring expensive replacements. Because the engine needs removing to tackle most jobs, it usually pays to thoroughly overhaul it while it is out to avoid the expense of continuous removal as things go wrong, hence small jobs can grow to involve quite high costs.

The very early models had either two triple choke carburettors (which worked well but had no effective cold start requiring some patience) or mechanical fuel injection, which by now is becoming quite unreliable. They are light and had good performance with twitchy handling that took time to learn to control safely.

They do rust quite badly but there are plenty of specialists who will fully refurbish them – at a cost. They are typical of other sports cars of that age and have – what today would be regarded as – rather crude and basic interiors and controls. The introduction of K Jetronic fuel injection for 2.7 and bigger engines around 1974, improved the fuelling, starting and emissions (but is still crude by modern standards) and continued through the 2.7 - 3 litre Carrera 3, SC and Turbo.

We generally avoid buying anything prior to the 3.2 Carrera (unless it is a part exchange) because we have found that we often spent over £5000 renovating them to reach our standards for sale. We also prefer coupe's to targa's due to difficulties with water leaking in as the cars age. Even though the 3.2 models incorporate the improved Motortronic fuel injection, we still find that they often need engine rebuilds (for rings and seals) and new exhausts and clutches. The latter version with the G50 gearbox overcame the synchromesh problems of the earlier model and is a much better gearbox to use.

964 (3.6 litre Carrera 2 & 4, from 1990)

This model superseded the 3.2 Carrera, having slightly smoother styling, a bigger engine, power steering and ABS, the Carrera 4 having 4 wheel-drive through a front transaxle. The turbo charged Turbo 2 example is quite awesome.

They are a big all round improvement on the older 911, bringing the drive and comfort more into line with the quality of the original 944, while maintaining the mystique and thrill of a traditional 911. They have a revised exhaust system that sounds just fabulous. An interesting option is the Tiptronic, 4 speed sequential gearbox, making automatic driving more sporty and fun again with very little loss of performance once the car has got away from a standing start.

HARTECH AUTOMOTIVE

964 (3.6 litre Carrera 2 & 4, from 1990)



The introduction of ABS was a major step forward since the age-old danger of spinning the tail end of a 911 under braking (due largely to the very light front end locking up and the weight transferring to the rear as the front slides out sideways) has been severely reduced and safety has been greatly enhanced. The application of a 4 wheel-drive option has further improved the safety features although many find the Carrera 2 the perfect blend between the old and the new. The first 3.6 engines (the 964 Carrera 2 & 4) are very powerful, responsive and fast incorporating a number of technical changes from the 3.2. They seem reasonably reliable, but are more time consuming to work on and servicing costs are therefore higher.

Things were improved with the 993, so while the 964 range are fabulous cars, we have increased the prices of our Lifetime Maintenance Plan for the 964 to reflect the extra time taken servicing them. There are for example twice as many spark plugs than the older 911's and it is necessary to remove the under-trays and exhaust system to gain access to the lower row of the twin spark plugs for each cylinder or to adjust tappets. Many examples we see have not had these lower plugs replaced by the last service centre. Consequently service prices are higher and because many cars have not been properly serviced (to avoid these costs) additional problems have emerged.

A change was also made from solid gaskets to recessed rubber seals in some engine joints, which work well for many years and improve accessibility and strip down times. However they eventually need replacing. Although the cylinder head sealing system on the 3.2 Carrera was reasonably reliable, the additional bore size rendered the 964 prone to oil leaks through the cylinder head joint face. Porsche modified this design later with new revised cylinders and heads and a wills type-sealing ring - but for many the cost of these replacements is prohibitive. Also the cylinder base seals were vulnerable. All this combined

with a power steering shaft seal that has limited life have rendered these cars likely to leak some oil as they age. Unfortunately, even when they have been rebuilt they are not always oil tight. We modify the cylinders to accept the later head gasket sealing rings – which greatly improves sealing but still they sometimes eventually leak a little. Higher mileage cars would benefit from new big end shells when the “top end rebuild” is considered – developing into a full engine overhaul.

Despite this, the basic engine is superb and we expect that, if they are properly looked after, they will prove **mechanically** as reliable as the previous models. However some electrical problems are beginning to emerge that are quite complicated due to increased sophistication. Usually the fault is easy to put right once the reason has been worked out but they can be very time consuming to solve. Often the computerised diagnostic systems reveal a fault but not the real cause and circuit diagrams have to be traced and analysed to work out why the diagnostics got things wrong. Sometimes a proprietary alarm/immobiliser system will handicap the diagnostic process. If the battery goes flat it is necessary to download software from a Bosch Hammer to enable it to run properly from tickover. Later cars (like the 993) incorporated this software into the car's computer to get round this. Some problems with unstable tickover are beginning to emerge that have a variety of causes that will no doubt be resolved in time.

993 (3.6 litre, Carrera 2's & 4's)

This model took another step forward in styling, with several technical refinements rendering it a better drive of similar quality to the 944/968 range and good fun into the bargain. Tiptronic gear change developed into the "S" type with steering wheel push button gear change. Alternatively a 6 speed manual option is faster than anything that preceded it – with a top speed of 168mph. It also had numerous technical upgrades and refinements over the 964, such as hydraulic tappets, which for the first time eliminated the time consuming and painstaking task of setting tappet clearances during every service.

Up to (and including) this model, Porsche's quest for quality and longevity resulted in many components being made almost too well and to last almost indefinitely – increasing production costs – arguably unnecessarily – reducing Porsche's profits and resulting in financial vulnerability. More cost-effective production engineering on subsequent models has reduced production costs – increased profits and enabled Porsche to grow with confidence. This therefore places the 993 as the last of a dynasty - likely to be regarded as a classic – perhaps THE classic Porsche for many years to come – last air-cooled 911 with origins still traceable to the original examples.

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The 993 Coupe



The beautiful exhaust growl from the 964 seems to have been improved yet again and the ride and comfort are exceptional, while many mechanical improvements have been put in place - reducing service costs dramatically.

As perhaps the last true variant of the original air-cooled 911 it is by far the best and will be in huge demand for many years. They will probably develop a comparable reputation for longevity and reliability to the 944 range and we have reduced the cost of our lifetime maintenance plan for the 993 – 911 accordingly.

With the benefits of this fantastic car being more widely publicised, demand is increasing as enthusiasts focus on it as the one they ultimately aspire to. This gives confidence that the 993 will be a good investment and continue to be in huge demand with minimum depreciation for many years to come. However the down side is that this moving of the goal posts will bring a lot more older Porsche's to the market than before, probably suppressing their values.

Boxster

Although the Boxster does not fit in the 4-5 year old age limit set for other Porsche's in our sales range, it's lower price does fit in with other 4-5 year old+ models and as a result we have decided include it in our range (and indeed have already offered a 2 year old Boxster S 3.2 for sale).

Although they have not been in existence long enough to establish any long term running costs or problems, the present reliability appears excellent and the initial "Lifetime Maintenance Plan" prices will be similar for the Boxster as the 944 model listed in this guide (and will follow the same rules, terms and conditions etc that apply to all the other models). For similar reasons the 996 follows the 993 prices.

The Boxster



The Boxster 2.5 was Porsche's answer to the current wave of affordable 2 seater roadsters. It combined the latest fashionable styling with the traditional quality driving experience for which Porsche have been renowned for years. The positioning of the 205 Bhp mid-situated engine resulted in superb handling & performance with space at the front and rear of the car for 2 good sized luggage compartments, allowing this superb sports car to double up as a practical mode of transport, (providing that 2 seats is enough!). The Tiptronic S 5 speed automatic version is a little slower on pick up from a standing start but great fun using the steering wheel mounted switches to change gear. The variocam camshaft timing system combines good low speed torque (for the engine size) with a noticeable increase in power and exhaust note over 4,000 revs. In common with the 996 the engine is water cooled to enable it to comply with ever-stringent exhaust emission levels, benefiting from added noise reduction as a hidden benefit.

The 2.5 model was superseded by the 2.7 in late 1999. This was quite common practice in the history of new model development at Porsche – waiting for a period of time to expire to establish any weak areas before increasing engine size and follows almost exactly the development of the 911 and 944 range. There is however very little practical difference in performance and so – as far as customer choice goes – we would not particularly distinguish between the two for price or quality. An interesting package of general extras influences prices and desirability more, such as a removable hard top with rear de-mister for the winter months. Another extra is traction control, which helps in two ways. The "Driving Stability Control" reduces engine power if there is an excessive difference between wheel speed, (i.e. a spinning wheel), & the "Brake Regulation" instructs the system to apply the brake to the spinning wheel. The traction control is automatically on every time the engine is started but this can be turned off to suit different circumstances, (still allowing the odd wheel-spin!).

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With modern looks and adequate performance with excellent handling, the Boxster is in strong demand and will certainly become another classic Porsche. It has been made affordable by incorporating modern design and production methods, which have provided a high quality vehicle at reasonable cost. However, this also means that the long-term build quality traditionally associated with older Porsche's is not necessarily the same. As they were "over engineered" before - this is not of any concern right now - indeed early signs are that they will actually prove every bit as reliable as their predecessors. But - there have been important design changes and only time will ultimately tell.

Engines seem to be extremely tight and reliable units, but there have not been enough miles covered or enough time for corrosion and seal shrinkage to cause problems, for us to assess the eventual longevity of the power plant. Our guess is that they will prove very reliable indeed for many years, but then need similar engine overhauls, as presently apply to the existing 911 range. After all - very few cars will still be expected to perform at all after 10 years or so - so it is asking a lot for a Porsche to continue to do the same for many more years than that - without some essential maintenance.

In 1999 another new model was also introduced - the Boxster S with a bigger engine and a 6 speed gearbox. This moved performance levels significantly higher with exceptional acceleration and top speed. Unlike many earlier cabriolet designs (that basically had modified chassis' developed from an original coupe design) the Boxster chassis is purpose designed and is remarkably stiff, exhibiting none of the scuttle shake that often rendered earlier cabriolets less capable at speed or for track use. This has enabled the Boxster S to exploit the extra power without handicap - providing one of the best handling and fastest cabriolets of all time.

Even the tiptronic version has benefited from the additional engine power - giving very acceptable performance figures, better than many previous coupe models.

Perhaps the only criticism of this superb car - has been the flexible rear screen. Owners fear that it will deteriorate and detract from an otherwise high quality product. However - unlike previous cabriolets - the Boxster whole hood is much easier to replace - so when they eventually wear out or the rear screen becomes obscure and scratched - the replacement cost will be reasonable. In the autumn of 2002, Porsche finally provided a glass rear screen to put an end to this slightly unfair criticism, although the resulting new line of the rear of the hood is - for some - not quite such an attractive shape as before - proving just how hard it can be to please everyone.

The 996



The 996 is the latest 911 sharing much of the modern chassis technology, styling and engine characteristics with the Boxster (with many common parts). However the engine position relies upon the tried and tested experience of all 911's - behind the gearbox (instead of in front of it as with the Boxster). This provides the space for rear seats (as previous 911's) preserving the new 911 as a 2+2. However - to comply with current and future emission legislation - this 911 has finally adopted water cooling - to the dismay of some traditionalists. While this has given the reputation of the previous model (the 993) a lift (being the last of the air cooled 911's) it has also heaped some additional criticism of this latest model as traditional "air-cooled" fanatics try to express their disappointment over the water-cooling issue. It is common to hear that the suspension is too soft (for example). People forget that all modern cars - even family saloons - have improved immeasurably over recent years and by comparison the older Porsche models often feel their age. So for us - as both engineers and enthusiasts - we find the 996 a superb sports car and that the improvements in engine technology and suspension sophistication have provided yet another step forward in the glittering history of 911 production that will be revered for years to come. They have provided a modern Sports car with a faster, quieter engine and exceptional handling and comfort as well.

For us this combination of old and new has provided a modern 21st century sports car that still retains that unique 911 mystique. It is also the fastest naturally aspirated 911 ever yet maintains that legendary Porsche driveability at all speeds and in all conditions adding a pleasant surge of power over 4000 rpm. With impeccable handling and legendary build quality, this 911 will suit those for whom the evocative styling is an essential expression of their modern lifestyle and taste, combining fantastic performance, state of the art technology, cutting edge styling with comfort and sophistication.

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As with the Boxster – it is too soon to list problems associated with high mileages and the ravages of time – but initial impressions are as favourable as the Boxster. We have taken a risk in providing both the Boxster and 996 with cover under our Lifetime Maintenance Plan – as we do not yet know how they will fare in time (especially as the scheme has no time or mileage limit). This is an expression of our confidence in the continuing quality and longevity of both examples.

Four Wheel drive and Stability Control.

One of the criticisms of the 911 up to 1989 was that it was old fashioned technically. The 944 had introduced ABS before then and the 911 was deemed to be lagging behind. All this changed with the introduction of the 964, when ABS became standard on all 911's. Once sensors were fitted to work out individual wheel speeds – several other possibilities to control other aspects of car dynamics emerged. A further step forward was then taken with the introduction of a 4-wheel drive alternative - the Carrera 4.

Because the gearbox is in front of the rear engine, it was possible to fit a drive shaft passing forward to the front of the car where it drives another small differential to the front wheels. Set with a power split of 31% front & 69% rear, computer controlled transverse and longitudinal differential locks alter this split if it is sensed that front, rear or opposite wheels are starting to slip under power – giving greater control in difficult driving conditions. To help get going in slippery conditions an alternative diff lock can be selected to drive all wheels together up to about 30kph (20mph). We have noted that this model also has longitudinal and lateral accelerometers fitted to measure sideslip and rotation of the car. These also are involved in the dynamics of the computer programme.

The 993, additionally, has an automatic brake differential system fitted (ABD) that applies the individual brake to any wheel that is slipping (up to 44 mph) – without locking it of course.

In addition to “ABD”, the 993 turbo and Carrera 4, are equipped with permanent 4 wheel drive driven via a viscous multi disc clutch to provide similar all round 4 wheel and drive control.

The 996 Carrera 2 also has a traction control system that detects any rotational speed differences between the front and rear wheels and reduces engine power accordingly to avoid unnecessary rear wheel spin.

The Boxster has the rear engine in front of the gearbox, so a 4-wheel drive version would be difficult to conceive. Instead Porsche have introduced a system that is becoming

common amongst many other expensive cars. It reflects the Scandinavian Rally driver's style (and indeed Michael Schumacher's) using “left foot braking”.

One of the main reasons that a car can become unstable occurs when fear of a skid or a crash results in the driver taking their foot off the accelerator to reach the brake – because this results in the weight distribution and the load on all the tyres, changing suddenly. To control a car more effectively on difficult surfaces, some drivers have learned to keep the throttle steady while feeding a little brake on with their left foot – preventing any sudden changes in the weight distribution while slowing the car carefully.

Stability control systems do this by computer – but even more effectively by varying the amount of braking on different wheels to suit the circumstances. This is similar to the result of a viscous drive or differential controls because it reduces the torque being transmitted by an individual wheel.

The sophistication of computers allows further adjustment of engine power etc to result in a fantastic system to stabilise the car. The Boxster uses this type of system called “Porsche Stability Management”. If (for example) the front wheels of the car drift on a bend – the rear wheel on the inside of the bend is braked. If the rear swings out – the front wheel on the outside is braked.

None of these systems will prevent an idiot – who is driving far too fast for the conditions - from crashing - but they make a huge difference to stability in unexpected road conditions or accidents.

For's and against's.

Included in the arguments for these 4 wheel drive and stability management systems is the added safety for inexperienced drivers or unexpected conditions. It enables drivers to get away with more as the car compensates.

There are however quite a few arguments against. They may invoke a false of security or confidence. Drivers who are used to handling fast rear wheel drive sports cars may not like the intervention of the computer in deciding how they drive the car and may indeed compensate incorrectly themselves – being unfamiliar with the feel or the resulting feedback. Although they are very reliable mechanical and electronic systems, eventually they may become less so (perhaps after 10 to 15 years say) as parts wear and wiring connections become corroded, giving different feedback to the system - beyond the understanding of the computer. If this happens they may prove very expensive to trace the faults and to repair – eventually steering preferences (and possibly values) towards two wheel drive alternatives.

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Finally – the performance figures for 4 wheel drive and 2 wheel drive variants are often quoted the same – but our own dynamometer tests disprove this, showing the 2 wheel drive versions to be potentially faster on the road – not unexpectedly considering the extra weight and friction of the additional 4 wheel drive components.

General problems - all models.

The cars are so well designed and manufactured that they outlast most competitors many fold. When customers have had our 10 or 12 year old sales cars independently inspected they were compared favourably to typical normal cars of only three or four years old. They are therefore extremely reliable and capable of covering huge mileages with little expense. However, since the object of this guide is to inform, we include here some of the problems - even though they are rare.

Interiors. Probably the most expensive to renovate is the interior. Matching seat material is difficult to obtain and needs complete replacement to avoid the non-matching of naturally faded originals and new cloth. Although a good used set of seats are a sensible option, even these can be very expensive (£250 and over £500 for leather).

On older models (over 10 years old) some tearing of the upper roof lining is common, caused by the gradual drying out and shrinking of the original material. Cracking on the fascia of the dashboard (924's and pre '86 944's), is a common phenomenon, exacerbated by outside parking. Steering wheel covers often become tatty looking but can be re-stitched at reasonable cost.

Three spoke steering wheels often crack at the edge of the spokes - but are repairable. The forward location of the battery in the 924 and pre '86 944 results in corrosion and this - or holes drilled for alarms - can cause water to drip through onto the floor area or fuse box. Similar problems can occur with sunroof and boot leakage, particularly if the car is quite old, but new seals and cleaning of the drains, usually cures the problem. Some older 924/944-sunroof panels distort with age and cannot be repaired. The 911 sunroof seals are not perfect and scraper door seals shrink with age leaving a gap at one end. On older cars the lower inside edge of the inner door panels, will often soften and rot as a result of moisture trapped within the door.

Electrics. Common faults are with electric windows, electric mirrors, rear wipers, rear hatch release and electric sunroofs not working. These can be repaired with a mixture of new, used and reconditioned parts (which we stock). Another common electrical problem is damaged and broken spotlights and headlights.

Mechanical components - Brakes. It is not uncommon (even with a car with a full service history), to find brake disc pads totally seized in the calliper housing and discs and pads worn out or cracked – as many service centres do not touch these during routine servicing. Rear brake shoes (924), and hand brake shoes on the 911 or 944/68 range, can be worn out or seized, but they are inexpensive to replace and repair. Handbrake cables can seize solid and need replacement. Models with aluminium callipers (944 Turbo, S2, 964, 968, 993,) need the calliper plates removing, corrosion removed and re-setting to avoid very poor braking after perhaps every 50K - 6 years or less. The corrosion causes the metal plates to squeeze inwards and trap the brake pad, reducing braking effect and promoting rubbing, drag, overheating and wear. Sometimes this is so bad that the pad is almost impossible to remove and when new pads are fitted, if the plates are not re-set, the pads will not fit the gaps left. Some competitors then grind down the pad to fit but since the plate distorts in a curve – once it is in place – it becomes loose again and rattles.

Example of calliper plate lift



Clutches. If the gear change is sometimes difficult to engage, or there is a vibration, which is constant throughout the rev change, then on the 924, or 944 turbo, this probably means that the cush drive springs in the clutch are broken. Similarly with standard 924S, 944, S2 and 924 turbo (some Mark 2's), if there is a clunk heard when changing gear or when pushing the accelerator on and off repeatedly, then the cush drive is probably broken or damaged. The 968 incorporated a less expensive clutch plate without an integral damper that was quicker to fit. Damping was then achieved by a dual mass flywheel - which is expensive - and sometimes still needs replacement. 911 clutches do not have such a long life and are quite expensive, requiring the removal the whole engine/gearbox assembly to fit.

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Suspension. The rear suspension on all pre 1993 models seems remarkably good even after high mileages and on old cars, however the front suspension can suffer from damage and leakage to the dampers on the older models, but they are not expensive to repair.

The wishbone ball joint on the more modern curved dash 944 & 968 cars, can also wear necessitating an expensive repair although we have more than halved this cost with our own successful replacement units fitted with new ball joints. These demonstrate the benefit of the size and quality of the Hartech operation that analysed the problem thoroughly and invested a different solution to any present alternatives on the market. Forced to look into the problem by the very inferior reconditioned wishbones that were on the market several years ago in which an attempt was made to re-machine the ball joint housings, Hartech decided that they needed greater accuracy and bought in brand new mass produced "Porsche" ball joints & fitted them into the wishbones – providing an arguably better solution than the original design.

With records for every wishbone, Hartech have now supplied both the trade and private individuals with over 600 units without a single complaint or return. In this time we have also received worn out examples of other suppliers reconditioned wishbones to repair again – proving the value of a properly engineered solution.

Replacement Hartech Wishbone



The multi link suspension on later models (e.g. 993, 996 and Boxster) may well involve some unfamiliar costs as bushes wear in the long-term future – but offer less expensive repairs following light accident damage.

Steering racks. Steering racks are usually reliable, with fairly inexpensive replacement possible, although power steering pumps frequently leak. The "U J" connecting the steering wheel to the steering rack is a common MOT failure - however they are inexpensive.

Gearboxes. Gearbox-whine caused by wear to the main input bearing is common on all 924/944 models, and does not necessarily indicate serious unreliability. Grumbling noises at the rear usually indicates that the differential side bearings are worn, which are surprisingly inexpensive to replace. Bad clunking when driving or a knocking noise is more usually the outside rear wheel bearing on older cars (which can be replaced quite easily), CV joints or seized handbrakes and or cables.

The (pre-1987) 911 & 924 Turbo gearboxes were reasonably reliable but a little slow and lumpy in operation of the synchromesh, which often requires replacement - particularly for 1st or 2nd gear and it is difficult to predict when it might fail. This is not too expensive though and many specialists are experienced in the work involved.

Instrumentation. The instruments fitted to the 911, 924, 924S, and pre-curved dash 944's, are quite robust and reliable, and inexpensive to replace. By contrast the instrument system in the later model 944's (curved dash cars) and post 85 911's, are more complex and cannot be easily or cheaply split or repaired - thankfully they are very reliable and we do have both used and reconditioned units available.

ACROSS ALL MODELS. These are some of the difficulties of buying a good car. A Used Porsche can combine the very best of owning and driving a Classic Sports car. Superb looks, low later-life depreciation (or eventual appreciation), modest maintenance costs and insurance, economy, pride and excitement of ownership etc. Many cover 200,000 to 250,000 miles successfully (and are capable of much more) still looking and driving superbly. Apart from regular servicing, and consumables, the cars tend to go for huge mileages and several years, needing little else and then, suddenly need a lot of expensive work, to return them to full reliability. As a result they can also break owners hearts and bank balances if their car is bought or looked after poorly, or simply at the wrong time, becoming unreliable or expensive to run and difficult to dispose of.

They have very high quality design, manufacture, materials and production that make them capable of covering this high mileage's successfully and the excellent interiors and galvanised bodies, still look superb afterwards. Regrettably this often lulls owners into a false sense of security and small relatively insignificant and

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inexpensive parts that have not been replaced when needed, can result in huge repair bills as a result of the wider damage they cause when they eventually go wrong and the cost of parts that would not have been necessary if the maintenance had been better in the first place. A £13 Cam belt every 45,000 miles can avoid a blown up engine, as can a head gasket or water pump every 10 years or 100K miles.

The Anomaly - of the Full Service History Car & the difficulties in finding a "GOOD" car - that result.

This longevity has been exploited by unscrupulous owners and dealers to clock cars and falsify service records, making it almost impossible for anyone other than an expert to judge the "honesty" of a particular car. The result is that many older Porsches are falsely described and overpriced. Even when a car HAS covered the mileage claimed and the SERVICE RECORD is TRUE there is still a hidden minefield to beware of. So many dealers, specialists and magazine articles - advise buying a Porsche with a "Full Service History" that they have attached a false sense of security to that position - which in turn makes it very easy to sell cars with FSH. Buyers assume the car is A1 if it has FSH when in fact the opposite is often true.

The "true" services may only change oil, plugs, filters etc and then may identify numerous faults, which do not need to be rectified to obtain a service record stamp. In addition owners sell precisely when they find out - after a service - that their car needs hundreds or thousands spending on it (especially if they have had a couple of inexpensive years out of it). The result - you can buy a FSH car perhaps advertised as just having been serviced by a specialist (expecting it to be almost perfect) and immediately experience expensive failures or repair bills (well known to the previous owner). We know - because some of our customers - sell instead of repairing faults - with their service stamp correctly in place.

If "FSH" doesn't guarantee a good car, there is no cheap or easy way to buy a "good" reliable Porsche and plenty of examples of buyers (private and trade) making these typical mistakes and regretting it.

Even we can only buy cars that have the potential to be turned into good cars, as it is almost impossible to buy a perfect one straight off (even if they are almost new with FSH) as no one spends money on a car they are going to sell. Price is not always a guide either as values vary with "good FSH cars" being where the demand is and consequently expensive but holding their value better and being easier to sell on for a good price.

Rougher examples are becoming cheaper but are difficult or impossible to dispose of, as no one wants them. With superb engineering quality, superb appearance, and longevity, the whole model range provides exceptionally good value for money providing that the cars chosen are properly selected and maintained.

Most owners love the cars and everything that goes with them, so as long as the right model is chosen to suit driving styles and expectations and a "good" car is obtained - they are very hard to beat.

If the biggest mistakes are made because individuals cannot judge the condition of a seemingly nice example (even if service histories and old MOT's are available), you have to question the basic parameters that you are seeking to satisfy. Presumably what you really **want** is a car that is in the **condition** that you would expect if you could trust the seller, the history, the repairs and the mileage - **not** simply a car with low mileage **on the clock** and a full service **history book**. What you want is a car truly in a condition that you might expect IF the supporting documentation was true and relevant. If only things were that simple.

We do all we can to provide a car that **is** exactly like that, true mileage and full history, properly checked, repaired and guaranteed. However, you would surely agree that IF many cars have clocked speedometers and dubious histories - and IF the routine maintenance had been ignored - OR carried out by cheap amateurs, you would not be so happy about relying upon the traditionally advice "that it is safe to purchase a FSH car" and be seeking some other reassurance about it's true condition.

To protect yourself in this difficult market - it might be worth considering the purchase of an older (less expensive) car - first - and then if you find that you like the model range, the supplier and specialist support experienced, then you can part exchange and update later having not risked as much initially (and this method accounts for about 25% of our sales). However - if you have set your heart on a particular model and cost anyway - then even using this guide you are still exposed to considerable risks in selecting the right car.

We can help you avoid this problem because we carefully assess and check all our potential purchases (which weeds out bad cars), then we assess the condition (which establishes the potential and final quality) and finally undertake a complete renovation of all parts in need of immediate replacement or routine replacement (which often costs us £1500 to £2000). We can usually work out if unscrupulous sellers have used false rubber stamps or old service books (from scrap yards) and have grafted the

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appropriate pages into the true book. Even when the service record is true, many owners have the standard service carried out to obtain a specialist stamp, attempting the other repairs themselves (or by a local garage), with cheap parts or ignore the repairs altogether (as previously described). Only a specialist will have the experience and resources to spot this during a proper investigation. All this means that the traditional rules for choosing a used Porsche car are flawed yet despite this it is relatively easy for a specialist in the model to recognise the quality of a car. We therefore try to provide cars of the right quality, by careful choice and skilled preparation.

If we ever buy a car with some evidence missing (which is extremely rare) it will always be a very good car anyway for which we believe the evidence to be irrelevant to it's condition (and that it probably was carried out anyway) and we will always declare this and have confidence that there was no deterioration of the quality of the car as a result – and it will always be a very good example indeed. Often an owner will have his car serviced and repaired and charge the account through his business. When it comes to selling the car, they often find it too time consuming to obtain all the invoice copies from their previous company records (or need to keep them for future proof, Vat checks etc) and perhaps accept a little less in part exchange rather than trace or copy all the invoices.

We find – that even with our own customers – the busiest amongst them frequently forget their service book, which doesn't then get stamped even although the service WAS carried out. Fortunately our records are second to none (going back 10 years) and any car that we have looked after will have a full-computerised record plus all our internal paperwork records (that were filled out during the service by the engineer) are also filed away for posterity. However our experience of our own customers reveals to us just how easily a true record can be missed. So it is possible for a good car to have some records missing, or a poor car to have them all present and any car may have been clocked during it's life – but may still not-necessarily be a bad car.

Understanding of the true situation about the way to judge the quality and value of a Porsche is gaining more recognition as a recent club guide to prices of 911's valued genuine low mileage cars with genuine full service histories about the same as higher mileage cars that had been properly renovated or restored. We agree except that we often find cars that have been extensively worked on (perhaps with a new clutch, head reconditioned, etc) often end up even better than lower mileage cars that are inevitably going to fail in the very near future simply through those same age (corrosion, perished rubber etc) or mileage related problems that haven't been addressed yet.

The Hpi car checking service has revealed that 1 in 2.6 cars checked has a record (38%), 28% of dealers never check a chassis No and 40% only check the log book provided, one in every 7 offered to the private buyer has been a write off, one in 144 stolen and one in every 3.6 has outstanding HP (prejudicing ownership). A recent survey found at least one in 4 used cars was clocked and Porsches more than average. In our age range of cars over 4 -5 years old, we find many are not true or genuine (despite 60% having apparent complete histories). Finally the top agenda on the following agencies (Crime Prevention Agency, RAC, DVLA, RMI, FLA, OFT & Dti) are **cloning and clocking**.

Clocking is without doubt the most serious problem influencing the choice of car, since they last so well and look so good that the inexperienced simply believe that a clocked car is a genuine mileage example. Several years ago we bought a beautiful car without any history, suspecting it had been clocked and declared all this in our sales documents. We did not want to add our name to the list of owners so we couldn't trace previous owners. However the next buyer did and traced all the history from every owner – confirming that it had full specialist history and the mileage was within 2K of our estimate. This car has since had three satisfied owners and has proven to be as exceptional as our initial impressions suggested, totally vindicating our original purchase and because we carried out all the remedial work based upon the expectations for that mileage, it was totally reliable.

If you doubt the seriousness and frequency of this problem, just look in the adverts for 4 and 6 year old Porsche's and you will find many of them have covered between 60,000 and 90,000 – much the same as that claimed for most - older examples!

Now there is nothing wrong with a higher mileage Porsche, as their reliability (once overhauled) should be just as good. However clocked or genuine high mileage cars do cost more initially to put back into tip-top condition and so you should pay less for them. To indicate how prevalent clocking is we have for example recently been offered a 968 Cabriolet advertised at 40K that must have covered at least 140K, and a Carrera 4 Cabriolet showing 90K but having covered at least 150K. To indicate the mileage that genuine examples often cover, we were also offered two Carrera 4's showing 130K and 150K respectively (which was probably true and reinforces the argument that most cars cover these sort of mileage's by this age). Incidentally we bought none.

In view of the longevity of a higher mileage car that has been properly overhauled by ourselves, they are a good purchase if you pay the right price initially and the

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relevant work has been carried out. Indeed some properly looked after higher mileage cars prove less expensive initially precisely because so many parts have been recently replaced.

If you ignore this very well intentioned advice which stems entirely from experience - you will simply pay too much for a car needing extensive repairs and overlook perhaps a better car showing true but higher mileage on the clock. Remember that the most common problem is clocking. The involvement of Trading Standards Officers and records at the DVLC and Hpi now contain mileage information, going back a few years, making the winding back of speedometers less common, so many cars that may not have not been clocked recently, still were earlier in their life. Cars up to 5 years old often cover high mileage's and the next dealer simply rewound the speedometer back close to the last service to reduce the mileage, return the car to a full service history record and increase it's re-sale value. As a result many cars with impeccable histories have never the less covered much higher mileages than on the clock. While this is not a big issue for a properly checked and repaired car it is important to establish the preventative maintenance and costs required for the true mileage covered.

However - even cars with accurate mileage's on the speedometer vary considerably in condition, due to the way they were driven, since most of the engine wear takes place on starting, wear on seats is related to driver size, weight, height, miles between stops, etc. The wear on clutches and gearboxes relates to how often the gears are changed and the clutch used and the wear on brakes and steering to the frequency of turning corners and braking hard. Even the length of time that the car is used is relevant, relating to the time sitting on seats, using wiper motors, heaters etc - which is related to the average speed driven.

If we consider a comparison between a genuine low mileage car (say 40,000) used every day for short journeys in a city at an average speed of 15 or 20 miles per hour and a genuine high mileage car (say 100,000) used on long motorway journeys at an average speed of 50 miles per hour, then the wear on the engine, clutch, steering, gearbox, seats, instruments and controls would be worse on the low mileage car with each car being in use for the same overall time in hours/day but the motorway car having considerably reduced wear and probably the better car. Many parts suffer simply with age not mileage. All rubber hoses and seals, gaskets and all metal parts deteriorate with age, so in addition to use and mileage's - age and whether a car was garaged at night (or at work) can all affect the car's condition.

Of course during their life, most cars have a mixture of the extremes of use described - by different owners - adding confusion to a complex subject, but hopefully explaining why we can easily assess the condition of a car regardless of speedometer readings or history - and that this assessment is a far more important guide to the condition and value of a car than any paper work - or the lack of it associated with the car.

These cars can easily cover 200,000 to 250,000 miles (properly maintained) and still be going well when others with an apparently genuine 80,000 + (or even a genuine 80,000 +) can prove unreliable and expensive.

If you are sceptical about these claims we suggest that if we have one in stock at the time, that you test drive one of our properly selected and prepared higher mileage cars and compare it with a lower mileage one available elsewhere and remember that as time passes value will be tied more to condition (and the repairs and preventative maintenance carried out) than the mileage and that if you intend using the car for comparatively low mileage's yourself then the Average Mileage will gradually return to normal anyway.

Of course we buy genuine lower mileage cars as well but because the basic car has such well engineered components - capable of extremely high mileage's - properly maintained, we often find that a slightly higher mileage car with several vital parts replaced ends up better than a lower mileage car in which those parts are still OK but will need attention at some stage in the future and for the same reason will cost the next owner less in say the next two years. As will be seen later, our own Lifetime Maintenance Plan reflects this completely by costing exactly the same regardless of the mileage covered initially or during ownership.

This guide was originally written to help people that wanted to buy cars elsewhere to avoid making serious mistakes, and because it was perfectly clear that many of them were buying very poor cars needing considerable work to bring them up to scratch. To some extent this is not surprising when you consider how much work we do to bring our cars up to the standards we would like to see, (even with our considerable expertise used when buying them in the first place).

The purpose of this guide therefore is to pre-warn prospective buyers intending to buy from non-specialist, unscrupulous or potentially unreliable sources, of the kind of costs they may incur in bringing their cars up to a satisfactory standard, to insure that they do not overpay in the first place and have the resources to complete the job thereafter. It is not our intention in any way to put off and

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prevent people from buying from other sources. Furthermore we are still very happy to look after their cars and to help them all we can in the future – if they do.

Remember always that a high mileage car (as most will realistically be) can be perfectly reliable and valuable providing that having established the true mileage - the right preventative maintenance and repairs have been carried out at the appropriate interval.

Our own experience of comparing the quality of a car with it's history, has revealed that the number of owners, history and mileage are an almost irrelevant guide to condition - which is what you are really interested in.

Although we pay high prices to buy good cars, as most sellers have not paid for repair work recently - we do sometimes buy previously good cars that we know need repairs (like a new clutch, stone chips, seat repairs or mechanical work) making a superb car afterwards. As a result of this expertise, the cars that we buy, generally need to have less work done on them than those that are bought elsewhere by our customers, who then bring us their cars for renovation and repair - often costing £2000.00 to £3000.00 to return to safe reliable condition again. Where we benefit is when we sell a Hartech car for the second or third time (typically from a part exchange upgrade of a satisfied customer), as the original work we did will last for many more years.

We are so fussy about the quality of our cars that on the very rare occasions when - even we - bought a car which we later found out during sales preparation to be below our exacting standards - we have actually scrapped them for spares at a significant loss rather than sell them on to anyone else. We got from this the benefit of the sales of some good cars, a pile of good used spares to help us and our customers in the future and the satisfaction that at least these examples would not be fraudulently exploited anywhere else for gain.

Prices As Porsche's age, the difference in quality of a well looked after or carefully restored car is much greater than an average one that increasingly needs more doing to it as repairs are neglected or cannot be afforded by the typical purchaser of a cheap car. The value (or price paid) for a good car then sharply increases compared to an average or poor one, which eventually become uneconomic or impossible to restore. This causes some confusion in the market when a glut of poor but cheap cars tend to make some very good ones look expensive by comparison (particularly to those who do not appreciate the cost or quality implications of trying to use or restore a poor, neglected example). The graphs comparing Hartech and

non-Hartech running costs demonstrate this clearly (pages 46 and 47).

The right price to pay is one of the most difficult areas for new customers to understand, as they will frequently see quite large price variations between cars advertised that on the face of it seem very similar.

Usually, for very old cars, the classic car specialists set the market prices while for newer cars the trade buyer's guides do their bit. Unfortunately the age of most used Porsche's renders them too new for the traditional classic car market system and yet the trade guides are often hopelessly inaccurate because some use auction prices as guides (and very few Porsche are sold at auction except rough or dodgy ones) or the formulas that they use for similar cars do not apply to Porsche's. The two most popular trade guides (for example), disagree on the retail prices of the following similar mileage and condition - cars, by the amount listed (both taken from January 2001 editions). 1989 911 3.2 Carrera Coupe - £1075, 1990 944 S2 Coupe £2545, 1990 930 Turbo Coupe £2535, 1991 Carrera 2 Coupe (964) £4435. More recently the Nov issue of the previously most accurate guide showed a '92J 944 S2 with 88K on the clock to be worth £650 more than a 92J 968 with 44K on the clock!

So because values vary so much and trade price books rarely go back more than 10 years (and are often inaccurate anyway), we operate our own computer system which records all prices Nationally for each model and year, to find out what is really going on. This reveals the lowest and highest price, seasonal and overall trends etc, average prices etc. Care is needed interpreting this average price as it is only a mathematical average with most cars being cheaper and rough, fewer being nicer and more expensive and hardly any actually at the "average price" (with numerous lhd and written off cars confusing the issue). It must also be remembered that nice examples will be taken in trade exchanges so a higher proportion of cars advertised privately are actually unsuitable for trade re-sale. This means that even the average price of advertised private sale cars is misleadingly low.

Consider the average of 10 similar cars, 2 written off or lhd wrecks @ £3500, 5 rough ones @ £5000, two reasonable prospects (needing work to restore) @ £6500 and one very nice one @£7500. The mathematical average of these is £5,250 yet this would only be the price of the rough ones - not even as high as the reasonable ones needing renovation. With these figures, our system would value our cars @ £6,375 which is clearly a bargain for a fully sorted out and guaranteed example costing less than the reasonable prospects needing restoration (hence our success). These prices are similar to other specialist outlets

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(where we doubt that our preparation or back up services will be matched) and agree almost exactly with the top dealer buying guides on the market. They are neither the cheapest nor the most expensive. General family car sales outlets will be cheaper but offer little else, while back street part time dealers and private sales are often remarkably cheap but usually cost more after the cars in question have been sorted out (if they can be sorted out!) which are rarely the nicest anyway and with no meaningful back up.

As a result of this care assessing market trends, prices and our own experience, we think that eventually the year of manufacture will become irrelevant and that since each model was only manufactured for a few years before being superseded, the condition of a given model will become the only variable to dictate price (and several specialist dealers agree, by advertising models without registration dates or associated number plate indexes). So although the value of new cars depreciates both with age and mileage, eventually the condition, history and specification of a particular model, becomes the most important factors.

Our analysis of the older and more established 911 market prices reflects this with nice examples built between 1971 and 1981 having the same value, despite differences in mileage's and specifications. Models made between 1982 and 1992 are in most cases still in the process of finding that final long-term value with older ones level or appreciating and newer ones still depreciating a little.

In December 1999, the Express reported classic cars appreciating by around 5%/year and reinforced our opinion about the long term virtues of a classic Porsche and their suitability as an every day car, highlighting the benefits of fully restored examples.

But what do we mean by **depreciation** or **appreciation**?

If we consider two identical cars (age, history and condition) apart from one having covered 50K miles and the other 150K miles, then the lower mileage car would be worth more even though it is the same age. So depreciation/appreciation cannot be judged on age alone. Indeed we could only really trace true annual depreciation if we were comparing cars that always had the same mileage (and were therefore never used). So since most cars *are* used, their value must reflect the gradual increase in mileage covered, making generalisations about *appreciation* or *depreciation*, very difficult.

We solve this by a formula that compares prices of cars of the same mileage but different ages and cars of the same age but different mileage's, and later combine the results.

When trying to interpret the results there are also Macro economic factors to consider, such as interest rates, the housing market, insurance rates, new car sales etc - which all influence prices short term across the board, on top of which we also add our own interpretation of the market for unusual causes.

For example during the autumn of 2000 the fear of UK new car prices falling in line with European prices, made the market jittery and encouraged potential buyers to delay decision-making. Also, many owners - having ignored the housing market for several years - decided to move before house prices went too high and sell the "third classic car" to help finance it - increasing supply and reducing demand. This lowered prices for the first time in years. Porsche also sold a lot more cars in the mid 1980's than at any time before (with a much bigger model range) and as this "baby bulge" of Porsche cars is now becoming 15 to 20 years old there are too many of them for that market - lowering prices. However - despite increased numbers available - it is also increasingly rare to find a nice, genuine, well looked after example and these still have a market and command good prices that are much higher than the generally advertised market prices.

The drop in new car prices has also reduced part exchange values so much that those wishing to upgrade can be very disappointed by trade in values or find themselves in negative equity, reducing general trade and prices.

Many forget that the price of the newer car has also fallen significantly (even possibly more) so for those upgrading, or buying a Porsche for the first time the recent changes have had little or no impact (except for those in negative equity), although customers are ironically often more upset about the drop in value of their old car than they are pleased about the drop in the cost of it's replacement - that's human nature. The Porsche Boxster originally priced from £39K in 1996 - despite being improved and with a bigger engine - is now available from £32K - demonstrating this dual edged sword of general price reductions in the UK.

Some did not expect all this to affect the specialist second hand market, but it has because as New Car prices have fallen then so must each car - year older - follow suit. However the effect on Porsche cars over 5 years old is comparatively small compared with much newer cars and other manufacturers - perhaps averaging about £2K over the last 6 months. By comparison, some other makes of 12 to 18 months old cars have actually dropped in value, by £10K or more. We recently part exchanged a 4 year old BMW (at book price) that had lost the owner £28,000 from new retail to trade buy in - £7000/year.

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Because we buy and sell in the same market (and thanks to our market price checking system) we have been able to respond quickly to price fluctuations and have recently enjoyed one of the busiest sales periods ever, proving that demand is still there for quality vehicles at the right price.

Overall we feel that prices of rough used Porsche's have probably dropped by over £3K or more. The market for very nice examples is still there but has probably fallen by about £1 to £2K. Outstanding examples (or those benefiting from extensive refurbishment) have fallen by about £1K and it is these that we expect to rise again as they are rare and in our view have only fallen as a result of the difficulties in the market generally and the response of traders to the recent situation, which should stabilise. As previously reported, 993's are presently appreciating and the demand for Boxsters seems to be growing which will ultimately help preserve their values. Once the prices have settled down and as the public gets over the recent changes, pay more off their finance (so negative equity values disappear) and seek attractive examples, demand may well exceed supply and relative prices will almost certainly rise.

It seems that nice examples of 924's and 944 turbo's are now old enough (or rare enough) to begin the gradual appreciation to mirror 911's and that 944's and 944S2 Cab's are following. The 944S may suffer from bad press due to the camshaft and engine stability problems afflicting them first (being the oldest 16 valve variant). Similarly a lot of S2's have reached an age where they need £2000 to £3000 spending on them (after which they will be good for perhaps another 10 years or 80,000 miles - apart from service items like tyres and brakes etc) and are being offered for sale cheaply to avoid the repair costs. As a result, prices of these poorly maintained examples have temporarily dropped. However the remedial work necessary (or the consequences of ignoring it) is being widely publicised, which will probably restore higher prices for good examples - across the board once the preventative maintenance or repair work is completed and quality and reliability are recovered.

Pricing is always a complex issue with classic cars and is more difficult for a Porsche than other make, because although the price for a well-restored example can be (and should be) much more than the average price or the price for a worn out wreck, it does not follow trends for other cars. For example, a poor example of a Jaguar Mk2 may be 3K whilst a nice one can be £15K and a "rebuilt as new" example £50K. A rusty MGBGT may be £800, a nicely restored one £8K etc. This puts a potential multiple of perhaps 10 times between a rough and nice example of these old classic cars (and sufficient to consider a restoration commercially viable). By comparison a rough

old 911 may be £4K or restored, £12K - a multiple of only 3 times. A rough, high mileage and nice low mileage 1987 944 may cost £3000 and £6000, or a rough and nice S2, £6000 and £12000 - multiples of only 1.

It is perhaps this relatively small price difference (compared to other classic cars) that explains why so many home mechanics find that they did not create a bargain by trying to restore an old rough but cheap Porsche (because the entry price even for a rough one is comparatively too high and the parts are relatively expensive) and why it is actually better financially to buy the best you can afford and look after it, because the gradual long term appreciation (or minor short term depreciation) of nice cars will protect values and meanwhile there is little or nothing to lay out for repairs or maintenance.

Really nice examples are always the most enjoyable to own, the least troublesome and the easiest to sell for good money when the market is right. Short-term market fluctuations have always been around but obviously we cannot respond to these in such a timeless publication, so we have attempted to assess the likely long-term future price of each model, in our opinion as a guide.

Compared to traditional "Classic Cars" the Porsche range has numerous features that render them an increasingly attractive proposition that should reflect on strong long-term values. The galvanising delays structural problems while the advanced styling maintains attractiveness for longer.

The engineering is always at the forefront of technology making the specifications topical for years. The performance exceeds most other similar sports cars and the reliability and engineering quality is unmatched - making the whole exercise affordable. It seems likely then that this long term gradual rise in values will influence Porsche's, more than any other comparable classic car and that values will always remain strong particularly with the more modern and user friendly 944 and 968 range, the 964, 993, 996 and Boxster.

The final price that each model will attain will probably reflect the differences in performance or specification in a ranking and also into which the traditional 911, MGB, Jaguar etc must fit. Now by most standards the 924 and square dash 944 are less of a car than a 911 so should always be cheaper. The curved dashboard 944, while a superb all rounder may not quite attain the 911 mystique, but the 944 turbo and S2, should in our opinion, always be worth at least as much if not more as they offer more in every department. The 968 should appreciate, as it is a fantastic car manufactured in very small numbers and the last "practical" Porsche made with styling similar to the

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very popular 993. The 964 (Carrera 2 & 4) may suffer a little due to a few teething problems and higher service costs but the 993, 996 and Boxster should exceed these values, representing a huge leap forward in the development of the 911.

Taking this into account and apart from temporary market fluctuations, by comparing quality and value with other classics and older 911's, we feel that nice 944's that were manufactured between 1982 and 1985 will probably eventually rise to between £4000 and £5000, 1986 to 1989 models to between £5000 and £9000, early 944 turbo's £6000 - £10000 and S2's and 250 bhp Turbo's £9000 - £12000. Older 968's are currently fetching £12,000 to £16,000 with little depreciation and have probably bottomed out. Due to the recent price reductions and their influence on the market, prices are presently towards the lower end of this ranking, so we would expect really nice examples to appreciate as their rarity increases.

Porsche are presently enjoying renewed popularity with sales of new models increasing and the long life benefits of older examples being more widely publicised. The very old examples of 911, 924 and 944 are presently inexpensive to buy due to oversupply with too many faults for the buyer of a cheap Porsche to justify. However the more traditional classic car owner (who is used to serious renovation of an MGB or TR7 and enjoys work at home for a hobby) is now showing interest in their potential to become the most rewarding older classic sports car available at a modest price and this should mop up any oversupply and firm up prices when their fully rebuilt examples come to the market and command high prices.

n.b. This price trend information is provided to help prospective buyers understand the market and issues better, It has been prepared with the best of intentions, but we cannot be held responsible for fluctuations or trends in market prices, nor if they do not follow the above trends as they are beyond our influence or control.

As we successfully buy and sell in the same market and our costs do not vary much, our prices follow market trends anyway, always being competitive.

Cost savings with Hartech. Many dealers cannot understand how we can offer such extensively overhauled cars with such comprehensive after sales services at such reasonable prices. One of the reasons is by doing all the work and several different jobs at one time, in a large efficient workshop using special equipment and tools with highly trained staff, who specialise in the models.

Competitors. We do not run down competitors, concentrating instead on doing our best for our customers.

However there are many that offer similar prices but do not have the quality that we have, or the standards of workmanship or records systems so vital to providing planned maintenance. Others are much more expensive but the workmanship is no better and the costs far higher with often less personal service and more interest in the more expensive, newer cars.

We concentrate all our resources in providing an affordable Porsche in exceptional condition or – for service customers – a way to keep a standard Porsche performing at it's best, reliably and affordably over many years and thousands of miles. Many other local competitors have different areas of specialisation or interest. They may prefer to concentrate instead on racing, tuning and competition, or spares from written off cars for example and only carry out servicing or standard repairs to increase turnover. A business will always be best at whatever holds it's main interest, whatever it's staff want to do the most and whatever it has concentrated it's main resources on and businesses that try and do too many things are never good at all of them. We are very clear about what motivates us all and what we have concentrated on throughout – the restoring or maintaining of a viable Porsche back to it's most reliable-original-standard condition, performing at it's affordable best as originally intended. This provides the most balanced car, ideal for it's purpose and preserving the best re-sale value. As a result, we offer unrivalled quality, service and value.

Tuning and track preparation. Providing more horsepower - often results in needing better brakes, stiffer suspension, greater cooling etc and can reduce long-term reliability - as more parts are strained beyond their design limits. Most "tune up chips" also stop the diagnostic system from being accessed by a remote computer and preventing re-setting of systems – taking away a valuable and cost saving benefit on most standard cars since 1992. So tuning can not only become an expensive vicious circle but also deter from the pleasure of driving on public roads and eventually – despite often-huge costs fitting the tuning equipment – it usually reduces re-sale values. We do not specialise in this area and will happily recommend suitable specialists to relevant customers.

Consumer Protection. Despite improvements in legislation, it is very difficult to obtain meaningful protection from most private and trade sources. There is very little comeback from a private seller, since they "cannot be expected to be competent to accurately judge the condition" of the vehicle they are selling. Many dealers do little more than just clean cars before selling them and most would not have the expertise to assess serious faults, which might be disguised within the car and the reason for its sale in the first place. Warranties

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provided by dealers tend to be of little use (in our experience), as they often only relate to actual failure of components and even then refuse claims where they consider normal age related wear and tear to be the cause.

With a Porsche over 5 years old and having covered many miles it is too easy to claim this as the cause and refuse to pay out. Even where guarantees or warranties may be provided – and honoured, it is also important to question the competence of some sales outlets with minimal repair resources. Non-specialist repairers, would almost certainly only have access to new parts anyway which can be very expensive and by contrast specialist dealers often accumulate perfectly acceptable used parts to help the owners of older cars keep them on the road at a more modest cost.

Unlike Hartech, very few dealers will put in writing an accurate description of a car (which would be legally binding), and if promises are made verbally, they are difficult to prove in law. As a result of the above, if you are considering buying privately, from a non-specialised dealer, or even a Porsche specialist that has limited repair facilities, our best advice is that you have a reserve of capital, of about £2500 (for a 924, 944 or 968), £3000 to £5000 (for an older 911), £3500 for a 928 and a 964 and £1000 for a 993, 996 or Boxster, to cover unexpected problems.

Write offs. Very few buyers would be happy to purchase a written-off vehicle. However even in this apparently simple area there are serious pitfalls. A "write-off", is purely a financial consideration and is not directly related to the extent of damage that is to be repaired but more to the value of the car at the time. This problem is particularly highlighted with Porsches because of the very high cost of the original cars, and the high expense of genuine new Porsche parts, which has two contradictory influences making a Porsche more likely to be written off with comparatively minor damage.

As most repairers can only use new parts, and as some of these are very expensive, a small amount of damage can result in an older vehicle being written off. Because some new parts are so expensive, there is a huge demand for good quality second hand used parts, which are taken from these crashed vehicles.

As a result the price paid for a written off vehicle - by a breakers yard - is high, making it attractive for an insurance company to consider selling the vehicle on for salvage rather than repairing it. Realising this, many private individuals, and body repair shops, will buy a salvage vehicle from the insurers, and then repair it with used parts (which are subsequently much cheaper),

resulting in a perfectly acceptable car ready for resale, at a reasonable profit to them, but with the stigma of having been "written off".

Conversely, a Porsche that is only a few years old – is so valuable that it might not be recorded as a "write-off", even after an extensive rebuild – and appear to all the records as clean. This means that the stigma of "a written off vehicle" could easily be attached to an older car that has simply had its door dented, but not be attached to a car - that when it was much newer - had a major repair.

To make things worse, until 1995 you could remove a write off record by having the vehicle inspected and passed OK. However - since 1995 you cannot and the history is traceable. The history of LHD vehicles imported from abroad is almost impossible to trace and many are repaired before or after import, and then sold as "straight". (This difficulty and that in tracing mileages and verifying service histories has resulted in us avoiding the purchase and sale of LHD imports).

All this means that whether or not a vehicle has an insurance record, it may still have been involved in a serious accident and you could easily buy a car with no insurance history whatsoever that has been seriously damaged at some time in its life, or alternatively consider buying one that has an insurance record but which was for such a ridiculously minor element of damage, as to be totally insignificant. It must not be forgotten that owners do not always declare accidents, and that they may then arrange for their seriously damaged car to be repaired cheaply, at their cost, to avoid the insurance record and yet eventually come onto the market as apparently clean cars.

Ringers. The car that you may be considering may not indeed be the car that you think you are buying. It is not infrequent to find cars repaired by welding and connecting whole chassis sections not only from other cars but also from cars of a slightly different model or age, or indeed for a full ringer to be made available when the identity of a stolen car is changed to match the damaged one. The transfer of chassis numbers is carried out during this process, but rarely escapes the attention of an experienced engineer.

Checking History. Many Porsches have had several different registration numbers that can obscure the history and be expensive to trace. Despite this we try to check out each and every registration number and with the Hpi National Mileage Registers to check for discrepancies. This protects the next buyer from a car that may still have HP outstanding, have been stolen, or accident damaged.

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Bodywork and Paintwork. By the time a Porsche is over five years old it will have picked up a considerable number of stone chips to the front and wing mirrors. Any nice looking example will therefore have quite rightly been re-painted and this is a perfectly acceptable practice if it has been carried out professionally. Colour matches may have been perfect at the time but new and old paint then fades at different rates, so poor colour matches need not necessarily reflect a bad paint job and most cars have had a minor bump or scratch in their life needing attention. Metallics cost more to re-paint as matching is more difficult and localised repairs are usually impossible requiring whole areas to be re-painted for minor damage.

Windscreens will often crack after a heavy impact, (although there may also be an innocent explanation). Look very carefully at the front and side of the vehicle, all the gaps around the headlights and the bonnet, the doors, and the general lines of the car should be smooth flowing and uninterrupted. If not, the car has been repaired cheaply. However most poor bodywork is not sufficiently serious to warrant discarding an otherwise good car, as it is one of the easiest tasks to undertake and correct. Although it is rare to see a car that is made from two halves, it is common to find a car where some parts of the front or rear end have been replaced from another vehicle.

The original chassis (in our model range) is made from zinc coated steel spot welded together in a process that is at a sufficiently high temperature to melt the zinc locally to the spot weld – creating a pure steel-to-steel weld. The zinc then flows back sealing up the joint.

Because the sequence of assembly cannot be reproduced for a repair – most repair panels are not zinc coated to ensure that repairers can weld the parts successfully. It is therefore sometimes preferable to either panel beat out a dent in a galvanised area (or replace with a used panel that is galvanised) and repainted to colour match. Providing the panel has been properly aligned, and professionally fitted, it can provide an acceptable (even preferable) solution.

Fuel changes to unleaded. Now that the availability of 4 star fuel is limited to lead replacement fuel and is widely replaced by unleaded petrol, many owners have become worried about the effect on their engines.

We are unconcerned about these changes as many of the models can run on unleaded anyway and those that are not recommended by Porsche may well run satisfactorily on the highest grade unleaded or LRP with normal use. Manufacturers are cautious about recommending anything that could backfire and their advice must also cover the most extreme cases - which probably means a flat out drive on unrestricted roads, for long periods, fully loaded

over many miles, in hot weather in a high mileage car ready for it's next service.

In these conditions the thermal stresses in the engine would be much higher than those ever experienced by driving normally on our British roads. It is very likely therefore that the cars would perform satisfactorily for most occasions on more inferior fuel than that recommended.

Because all Porsche engines have alloy heads, the valve seats fitted are harder than a cast iron head and should stand up well anyway to resisting valve seat regression. IF there is only low grade unleaded fuel available (which we cannot foresee) then we can still modify engines, supply the re-mapped chips, or we can even re-programme the ECU to retard the ignition timing and increase the injector pulse width - on some models.

Our conclusion therefore is that the recent changes will have little effect on any of the Porsche range and that there will be several options available whatever happens. Additives will probably be increasingly available anyway for older cars (as they are in Europe) and if not most Porsche's driven normally run OK on the 98 octane unleaded or LRP. Further details relating to each model are available on request.

Hartech Pre-purchase Checks and Sales Preparation

We advertise for good quality Porsche's Nationally from which cars are offered from private and trade sources. After asking a lot of pertinent questions, those of interest are put through a check with hpi (to check for damage, Police interest, outstanding HP, etc) and the mileage is checked with the National Mileage Register - both against all previous registration numbers.

The good prospects are then inspected and road tested with the results being recorded on our Initial Inspection Schedule and those few very good cars that remain of interest are then carefully considered, from which a price is offered reflecting condition and the cost of renovation etc.

Those that are bought by us are often seen at our premises by prospective purchasers before we have had any opportunity to carry out any further work (recently two cars typically within hours of arrival) so many are sold having never been advertised.

We try to put each car through our next "first service schedule" before then, which covers major engine work and to check that steering, brakes etc are all safe and to highlight other minor faults and cosmetic work that has to be completed. The car is then safe to test drive and we can

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inform customers exactly what we expect to do to it before completion.

Sometimes - sudden changes in personal circumstances or bereavement - will result in a Hartech car that has been sold quite recently or having covered very few miles since it was sold – being bought back for re-sale.

We may offer such a car for sale at a lower price – on an “as seen trade sale basis”. Because it has so recently been prepared for sale there should be nothing wrong with it. Yet if we sold it for the full price we would have to carry out all the service work again in accordance with our standard sale terms and conditions and to comply with our warranty terms.

This then provides an opportunity to buy a Hartech car at a lower price for those who may be able to look after it themselves or live so far away that they do not want to take up any warranty options.

We always have a range of different cars and prices in stock and will happily spend considerable amounts of time with customers, helping them to consider the differences and decide exactly which car suits them most within their own budgets. When a sale is made, a completion date is agreed allowing for the remaining work - typically 2 or 3 weeks.

Sometimes - because faults have by now been identified - we will consider a sale without everything on our list being completed by ourselves, at a reduced price with no guarantee or warranty. This enables some customers, who may have capabilities of their own (or with friends) to carry out some remedial work, to obtain a good car that already has had the important work and checks completed - at a lower price.

For those cars that follow the full Hartech route, they are booked into the workshops and a 2nd service schedule is followed with great attention to detail, to complete all the work identified (which is even more comprehensive than the "C" service schedule listed on page 55).

A lengthy road test is included, an MOT, a full Valet and the car is supplied with our guarantee and Lifetime Maintenance Plan (1st 3 months FOC) in place (see page 44 for details). Different wheel options including 17" replacements are available for most models.

A full report on the condition of the car and the work done is also provided and recorded in the computer system for future reference. From then on we place our top priority and all our facilities and expertise to care for that customer and car.

By providing the first 3 months Maintenance Plan free of charge, we never know who will take up the Lifetime plan and so you can be reassured that we really will prepare every car to the same exacting standards, regardless of the long term warranty implications. This is why we have so many happy, satisfied and loyal customers, many of whom have expressed their appreciation in writing. For example:

"I would like to say how impressed I am with your business both in the manner of operation, customer service and end product. In times when mediocrity is the norm this really stands out. I base my comments on an extensive knowledge of the motor trade over 20+ years and feel your formula is deserving of ongoing success. The car is an absolute gem and as you promised was presented in excellent order". G W (Leyland).

"Just a short note of thanks for your professional and courteous manner. It is very reassuring to know that there are still genuine enthusiasts within the motor trade who regard customer services the way you do. We are absolutely delighted with our purchase and look forward to many happy years of Porsche ownership and business with Hartech". K L (Ashbourne).

"I would like to express my thanks for your help and assistance in the purchase of my "Hartech" 944. Your service and guidance was second to none and much appreciated". D H (Stretford).

Hartech Servicing and repairs. Customers are requested to phone, to book in all work in advance including all the little jobs that we cannot always find time to complete if it is included too late as an after thought. This is very important as we often find some vital unexpected additional work that extends the planned job time anyway. With our forward booking system containing several weeks work for other customers, it can sometimes be very difficult to complete unexpected additional work in time.

Upon delivery of a customer car, the work required is recorded on our customer order form (for clarity), a copy of which (including our payment terms and conditions) is always included.

Although we are happy to carry out individual repairs to cars that are known to us, a car that we have never seen before presents added complications. With so many short cuts being carried out by others, both fairly new and quite old cars may have problems that need rectifying that the owner is unaware of. So (for example) a customer may ask us to replace a water pump on a car that has a dangerously corroded fuel or brake pipe, a perished hosepipe or an engine manifold leak – that could still cause the car to seize the engine, catch fire or crash. By agreeing to do the

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work requested without checking over the car we would not be doing our best for the customer – nor protecting our reputation. Even though we may not have been in any way responsible for the fault – we do not want a car that has recently been in our workshops to fail catastrophically or cause an accident. So in many cases – with a car that is new to us – we may well only accept it into our workshops if it is the subject of our “C” service first – so we can thoroughly inspect and check it all and then report on the priorities that we find. After that – if a customer refuses certain remedial work – at least he will have been fully informed.

So if a car is new to us, our best provision is a total care package that starts out as a "C" Service (details on page 50). Following this we provide a comprehensive plan of action enabling customers to both plan for and save for work required in the future to return the cars to tip top condition or to pass future MOT's. Additional repairs and replacements carried out during this service are then discounted (details page 54) and can even result in the service element effectively being free of charge. After the report is provided it is stored on our computer to start a comprehensive record of the car and the work needed and carried out on it.

Even with a car that we have serviced before, on some occasions, when a customer requests specific work which is insufficiently thorough to check and repair all associated parts. In these circumstances, we may still refuse on the grounds that it is against both his and our greater interests to half do a job or do it poorly.

Once a new customer is accepted with our "C" service, our ability to look after their car is greatly enhanced with many customers finding our recommendations about future MOT failures or future mechanical requirements - absolutely spot on - and others avoiding the necessity by having the work done in advance (and benefiting from the associated discounts).

Such cars - looked after by ourselves where our recommendations are followed are also of great interest for our eventual purchase and are also accepted as a priority if any unexpected failures subsequently occur.

We will not carry out any extra work without customer approval. We fully understand customer scepticism when faced with telephone advice about problems with their cars. Consequently we are not offended if they require proof of findings. Damaged parts can be retained, or we are willing to stop work for a customer inspection, or video evidence can be provided during strip down if required.

Once a car has been accepted with a "C" service the next services are usually our "A" service at 6 months (or 6000 miles) and then a "B" service at 12 months (or 12000 miles).

These services are more thorough than any opposition's that we have come across but at competitive prices – so they are great value for money. Cars can be left with us from Saturday to Saturday if required or during customer holidays and a local taxi service can connect with the bus or train network (although there is a railway station less than half a mile away).

The "A" Service is basically an oil & filter change combined with topping up all levels and giving a brief inspection to the whole car, plus a road test. In winter it includes protective spray to vulnerable parts.

The "B" Service reproduces the work listed by Porsche for a typical 12000-mile service – applied with a thorough and time-consuming interpretation - and includes all materials. It can result in a detailed report of anything else found in need of attention (not urgent) with typical costs.

The "C" Service covers additional checks to the "B" service - necessary for cars that are at Hartech for the first time - all Sales cars, and includes a comprehensive written condition report, highlighting a planned maintenance programme. This includes cylinder compression tests, removal of brake pads, strip down and removal of belts and rollers (944/968 variants) and frequently exposes problems before costs escalate. It is similar to (but more comprehensive than) a 48,000 mile service elsewhere (please refer to page 55 for further details).

During a service, any additional new parts required which, are in any case removed and refitted during the service, are fitted free, which will, for example, include brake pads, belts and rollers during a "C" service.

Whenever a fixed price system is in use but another fault is being repaired that involves repetition of work, a proportional discount will apply, as it also will if two fixed price jobs cover similar work. If (for example) a 944 lux has a category "C" service (including new timing belts, a water pump, re-sealing the front of the engine, front and rear pads and discs, an exchange reconditioned steering shaft and a steering geometry check and re-set), although the total cost is £1048, the savings achieved by combining this work with a "C" service are £252 which is more than the cost of the original service and means that the service was effectively free of charge by comparison with doing the jobs separately on different occasions.

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A similar system covers engine and gearbox reconditioning, showing likely costs in advance, that is particularly important when cars are brought in as non-runners with damaged engines, that can only be assessed after stripping down. This also shows the costs of re-using good existing customer parts where appropriate and a refund price where parts that can be refurbished later, are replaced for speed, with others already refurbished. We carry a large stock of spares including new genuine Porsche parts, new high quality parts from alternative sources, reconditioned parts and used parts.

General points relating to Hartech Servicing and repairs. Despite our attempts to be as perfect as possible, it would be both arrogant and unrealistic to claim that we were capable of detecting absolutely every possible future problem that may ever occur to a car that we have prepared for sale or that we have been working on.

Consequently, there may (very rarely) be occasions when an unexpected problem or failure still occurs. If it does we always try our very best to satisfy the customer concerned and return their car to full working order as soon as possible. However, even this is not enough to satisfy **some** people (but never through lack of trying).

We have come to realise that in all businesses there are some customers that for one reason or another - do not get on with the business or their way of working and even if the business is one of the best there is, it simply cannot please everyone all of the time and there are also always some customers who try to take advantage of situations to save money.

Although we are always reasonable and try our best to help reasonable customers, we also defend unreasonable claims, as otherwise all our other reasonable customers (whom we feel deserve our protection) would ultimately pay for the costs of the few trying to exploit the situation unfairly.

Opening and Lead times.

Customers should note that the workshops are often fully booked for 2 weeks ahead (sometimes longer), so forward planning is advisable especially if an MOT date is looming. Opening hours are usually 8.30am to 5.30pm weekdays (except 4 p.m. Friday) and 8.30am to 12pm on Saturdays (which we try to keep clear for customer deliveries and collections and new customers).

Fuel Levels.

There is an increasing incidence of customers bringing their cars in for service or repairs but leaving about half a

gallon of petrol (or less) in the car showing the reserve light on. We then do not know how low it is or if it will run out or not.

This creates an unnecessary problem for us. We do not use the cars for any purpose other than service and repair work and testing but often a car will need to be run in the workshop, warmed up and allowed to cool again.

We also lose some petrol when we change a petrol filter or replace corroded fuel lines. Then at the end of the work we also need to road test the vehicle – often 2 or three times while adjusting mixtures or steering settings and we may conduct a dynamometer test of power characteristics.

We may well cover 20 or 30 miles during this testing and so we then need to fill it up with a couple of gallons. Although hardly any competitors are so thorough – we feel that we cannot be sure about the work we have done if we have not road tested the car (and we do not charge for the time involved in these road tests). Finding a petrol station and filling the car up takes time that we will in future charge for. So please will all customers ensure that their car has at least 2 gallons of fuel in it when it comes in for a service or repairs.

Security. The security barriers at the entrance to our industrial estate are raised to stop access by vehicles outside of normal working hours – in the evenings and at weekends. They may be difficult to see in some weather conditions – so upon driving down the private road to the factory – be on the look out for three raised posts across the road. There is also a second set further down the road.

Collection and delivery of customer Cars. In order to minimise our overheads we do not include free collection or delivery in our range of services. We do however have a vehicle transporter and will arrange collection and delivery at the very competitive rates of £20 (fixed admin fee) plus £1/mile (based on the distance one way). I.e. If you live 50 miles (or 200 miles) away the costs would be £70 (or £220) respectively + Vat.

We also will offer a discount if there is a lot of work resulting in an invoice value exceeding £500, but, as our charges are very competitive anyway and different jobs involve different margins, we can only offer these once we know the extent of a job. However typically it may be a discount of around 5%/£1000. You should check this upon enquiring about the work – at the time.

Courtesy Cars. In order to minimise our overheads we do not include courtesy cars (although we can arrange a low cost hire vehicle, both to and from our premises). It may be useful for customers to take out a recovery insurance to

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cover delivery of their car to our premises in the unlikely event of a breakdown (typically AA or RAC).

On-site Insurance. Whilst at our premises, customer cars are covered by our own extensive insurance. However if their car is protected by "agreed value" insurance and any loss or damage occurred, our own insurance would only cover for market value. To get round this we state on our terms and conditions that customer cars are insured at their risk while on our premises and this should enable agreed value policies to be used in the unlikely event of a claim.

Customer Commendations.

Perhaps the last words should be left to our customers. As two customer wrote

"I would like to take this opportunity to thank you for your efforts in repairing my Porsche. Throughout its time with you and the numerous problems encountered I found you to be professional and thorough. I will certainly recommend you to others and thank you once again" M C (Bolton).

"Thanks for the recent work, the car feels completely different, driving is now a pleasure. Having had to turn the radio up to drown the rumbling engine it's good to turn it off to listen to the smooth running" A C (Handforth).

The unusually high quality of even old examples coupled with the excellent performance, stunning looks and high sales values still find favour long after most other cars would be worn out, worthless or scrapped.

This however will only be achieved by a very high quality of preventative maintenance and the continual upgrading of a comprehensive records system supplied by an organisation recognising this need and responding to it, at affordable prices, that handles so many similar cars that their expertise is unmatched.

Hartech Automotive - as a business - has been set up, designed and continually developed to fulfil this need exactly, responding to needs and the feed back from customers. Its success is a measure of this effort and the professional competence behind it.

THE RESOURCES

Human resources. The founder of Hartech Computation Ltd (and its subsidiary Hartech Automotive) is a fully trained and qualified professional engineer, who spent his teenage years building and racing motorcycles and dreaming about Porsche's. Upon qualifying he started his

own automotive engineering business (Barton Engineering), designing and manufacturing racing gearboxes, for all the leading British, Japanese and Italian models, and complete two, three and four cylinder engines for cars and motorcycles.

With a dynamometer test rig and a chassis manufacturing section, the business eventually built complete racing motorcycles that won numerous National and International events World-wide.

In a market where other British machinery was outdated, he designed modern multi-cylinder machines at the forefront of technology and special engines for Barry Sheene and gearboxes for Suzuki, Honda and Ducati.

To enable greater resources to be directed towards the further development of his ideas, he accepted a take-over by Armstrong Equipment plc, where he became Technical Director in charge of Engine Development and helped to develop the World's first Carbon Fibre framed racing motorcycle.

After three years (during which the machines won TT's, the British Championship - breaking every lap record - and finishing 3rd in the World Championship French GP), he accepted an even more challenging role as director of a Carbon Fibre research facility where he solved design and development problems for (amongst others) the Lotus racing team and Aerospace.

Throughout this exciting career he indulged his love of automotive engineering and the Porsche marque, by owning a 356C, 3* 911's, a 924 and his then favourite, a 924 turbo.

Transferring his focus to Management, he went on to successfully direct a variety of private and public businesses in Aerospace, Automotive and Engineering, as General manager and Managing Director but didn't enjoy the experience.

Despite the obvious success and all the trappings, he was - at heart - an automotive engineer used to solving technical problems, but not equipped to enjoy the ducking, diving, posturing, manipulation and politics of larger company management - which he hated.

He finally stunned his friends and colleagues when he decided to get out of the rat race, return to self-employment and indulge his love of Porsche's by directing all his technical and managerial experience into building a small, modest but successful Independent Porsche Specialist business. The priority was to provide the best

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service available and to obtain and keep the finest reputation in the market.

It is very rare for anyone with such proven ability in automotive engineering design and management to become involved in the independent Porsche market, but by combining the ability to design and manufacture similar engines and vehicles, with the experience of racing and track development, business management, training and systems development, he has been able to rapidly expand the business to become one of the most successful and respected resources in the Country.

With a down to earth (typical engineer's) approach and a genuine desire to succeed, combined with a carefully selected and highly motivated young staff (with a wide range of experience and qualifications), he has produced a successful team capable of long-term development.

Technical resources

While most competitors seem to either concentrate on sales (with little or no workshop facilities) or on repairs and servicing (with little or no sales areas) or on spares sales alone, Hartech have always regarded the three as inseparable.

We believe that good sales preparation and routine servicing and repairs, demands the highest quality workshop support and spares availability and it would be a complete waste of these resources facilities if they were not used for sales as well to ensure that customers are not ripped off and get a fair deal and a quality car.

Hartech started off concentrating primarily on the workshop facilities and spares provision, that has now grown to incorporate 10 ramps, 6 engineers and a trainee, computer diagnostics, a small machine shop, gas and mig welding, fuel injector ultra sonic cleaner and flow tester, laser 4 wheel alignment, dynamometer testing, 50 workshop manuals and technical spec books, two hydraulic presses and a huge area of metal topped benches and 3000 square feet of parts storage shelves. These stock over 2000 separate items (including new and used parts, reconditioned engines and gearboxes, interiors, "Hartech" reconditioned wishbones, engine management parts, wiring looms etc).

The management systems include 5 networked computers, E mail and Internet access, card transaction terminal, microfiche spares reader and a basic reception area incorporating a seated and heated waiting room with typical Porsche reading material available.

Management control systems extend to cover, all jobs booked in by a "customer order", sequential job numbers issued and engineers job sheets, service record sheets, computerised records of the above and hard copy records for reference, engineers reports and full regular computer back up systems (overall similar to aerospace standards), greatly assisting planned maintenance programmes and problem evaluation by being able to retrieve repair/service history quickly and reliably.

Security is catered for by CCTV with on line phased recorder, a secure business park with barriers that lock outside of working hours and a sophisticated alarm system (as used in banks) and supported by a full time monitoring station and automatic Police back up (and is impervious to radio jamming and interference with telephone lines etc).

The whole resource - while tidy - is not over pretentious or flashy and provides a down to earth working environment to continue to provide the highest quality cars, customer care and back up services within the least expensive framework putting value for money as a first priority, to secure and maintain a superb reputation and a successful business.

THE FUTURE

Although the original aims and the way Hartech was set up has proven extremely popular with a great many customers, we realise that we need to continually appraise our performance, the services we offer etc to ensure that we continue to keep all our customers happy by providing exactly what they need at the right price and to maintain the gap in the services we offer and those of our opposition.

By working to an extremely tight profit margin and carrying out all the improvements to our systems and our factory ourselves in house, (including all the building work) we have gradually managed to create an excellent working facility with limited resources.

In response to the length our customers are keeping their cars we have now provided a revolutionary lifetime maintenance plan, to enable a small regular monthly bank payment to cover owners against the cost of regular services and an annual MOT in full and the labour for all repairs and replacements, for as long as they own the car. (Please refer to Hartech Lifetime Maintenance Plans on pages 44).

There is a physical limit to the size or rate that our business can grow and we recognise that with increasing demand we have at times been stretched to satisfy existing customers quickly. However we do not intend to increase

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our capacity again, so if the demand continues we will simply have to become more selective of our customers.

We do not intend to follow our financial advisors recommendations to raise prices to control demand but instead to maintain the policy that has seen our prices almost static for the past 6 years, giving excellent value for money through increased efficiency.

We have been unable to resist some small increases recently, however, these are far less than inflation or the cost of living index and all our existing customers know that there is very little comparison between - the amount of time, care and attention, that we pay to our customers cars - and our competitors.

For example - it often takes over an hour just to record our findings on computer or complete an engineers report, yet these permanent records become the key to the proper, professional planned maintenance programmes that enable us to minimise the problems and reduce the future repair costs for our customers.

We believe that we undertake far more work and take much more care during a service or repair than anyone else - then even if our menu prices are similar, the value for money is beyond comparison anywhere and ultimately is the least expensive solution by reducing long term costs through thorough, high quality workmanship, facilities and equipment.

We also realise that it must be very difficult for new prospective buyers to fully understand from our written descriptions, the poor condition of cars that have been bought or serviced elsewhere and have come to Hartech for the first time, or to visualise the problems that we have written about.

So to help understand things better, we have also been recording all those examples on video that - although very amateur and filmed live in a busy workshop, unrehearsed and with "warts and all" - will soon be compiled to create the first Video Porsche Buyers Guide. Some examples have already had a trial run at a local Porsche Club meeting, with stunning impact, revealing the most horrific condition of normal looking cars, once the outer skin has been lifted to see what's underneath.

This video guide will convert any doubting sceptics who will come to realise that the concerns we voice here are actually in many cases quite understated.

We have (as our existing customers know) built up this business by working long hours and re-investing continuously.

The huge difference between our modest adverts and huge turnover is many times more than our opposition and is only explained by keeping our existing customers happy and their continued loyalty, their own recommendations to others and our competitive prices.

The future changes we envisage are to keep those customers, because we hope to never become complacent about our enviable position.

Customer care and satisfaction has always been our first priority and we will continue to place the main emphasis of our business as firmly in that area in the future as we have in the past.

In this way we hope to keep all our customers satisfied and finding that we continue to offer the very best range of services at the most competitive prices while keeping well ahead of our opposition.

We were probably the first business to recognise the future potential of the 944 range as a classic car and set up a business to cater for it and preserve its quality and integrity.

Public demand (and organic growth) has encouraged us to develop our range into 911's, 964's, 968's, 993's, 996's and Boxsters and in future into every suitable model from Porsche that needs our special kind of care as it ages.

An older Porsche is a superb car to own and some of that pleasure comes from the certainty of it's quality and background and the comfort from knowing that even in the unlikely event of an unforeseen problem, there is a dedicated group of professionals ready, willing and capable of sorting it out with the minimum of fuss, at a very reasonable price (or under warranty).

This is our aim and we will try our very best to ensure that there is no better place to use for the purchase, service or maintenance of an older Porsche than Hartech Automotive.

WE REALLY DO "CARE FOR YOU AND YOUR PORSCHE"

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STANDARD TERMS AND CONDITIONS OF SALE

Hartech are one of the few (if not the only) businesses specialising wholly in the supply and maintenance of the older PORSCHE 911, 924, 944, 968, 964, 993, 996 and Boxster. These can be superb, reliable cars - capable of good performance and long life - but there are dangers. e.g. Over half the cars we see for sale - elsewhere - are being sold to avoid the cost of a major repair or in a very poor state. We buy cars in good condition or with known faults that we usually rectify before offering for sale. However, where cars are seen before rectification and the buyer offers a lower price, intending to do the work himself, we may agree a HARTECH TRADE SALE "AS SEEN" with "ALL IT'S FAULTS" - present at the time of sale or not - without guarantee or warranty (see page 52 for details).

These are not covered by any guarantee whatsoever, so the reduced price agreed is a reflection of the customers risk in buying the car at a lower price. Any faults whatsoever that occur (apart from those covered by statutory regulations), are entirely at the new owners risk and cost.

If the full price is paid, sales include a condition report (following a comprehensive check of the vehicle), that acts as a guarantee (to protect the buyer from omissions and oversights).

If the report were misleading in any way we would be liable to correct the resulting fault. However cars of this age can develop unexpected faults, which despite our best efforts to check and inspect the car, we have been unable to detect. If these develop after the date of sale they are not covered by the guarantee (unless they were the subjects of a misleading description in the report provided).

These would be typically caused by normal wear and tear, taking account of the age and mileage of the car. If this fault is in complete contrast to the condition report (where this is supplied as part of the sale), then we are responsible for the repair, but if the description in the condition report is fair, and the unexpected fault still occurs, then it is not covered (except by any warranty/maintenance plan that is applicable).

We can still repair the vehicle economically (as we operate with modest labour rates, special tools, spares availability and model familiarity) but a comprehensive Lifetime Maintenance Plan exists to protect the buyer if the above occurs (see page 44). In "grey areas" where it is not clear-cut when or why a fault occurred, and customers are reasonable, we try to adopt a compromising stance.

Very few cars develop faults anyway and when they do we always try to satisfy our customers. Our policy is to provide a car for an enthusiast, reasonably priced, in good condition - reducing the risk to potential buyers and enabling them to enjoy and afford Porsche motoring.

Due to the age of the cars, and for legal reasons mileages cannot be absolutely guaranteed. Deposits are non-returnable.

As our cars are not new, some are bound to have had some minor scratches or paint chips in their lifetime. When a car is offered for sale the buyer has plenty of opportunity to inspect and accept the paintwork etc. Since the condition of body, paintwork, window glass and interior trim is difficult to quantify in a report (often being more down to personal opinion) we feel it is necessary to exclude this from our condition report. As it can be judged by customers for themselves upon acceptance (and could be damaged after the date of sale) we exclude these from any subsequent claims after the date of sale.

Similarly because we cannot know for sure what paintwork may have been carried out on a car before we receive it or buy it, any faults that emerge later are not covered. However paintwork carried out by us prior to the sale, is covered.

We do not accept liability for cars driven in competitive situations or at speeds exceeding the legal speed limits on public roads. After the date of sale, we do not cover faults which could have resulted from any work being carried out on the car by anyone else (however well qualified) and guarantees are only valid if Hartech have looked after the car meanwhile.

STANDARD TERMS AND CONDITIONS OF REPAIR & SERVICE

Hartech are one of the few businesses specialising wholly in the supply and maintenance of older PORSCHE 911, 924, 944, 968, 993, 996 & Boxster cars. These can be superb, reliable cars - capable of good performance and long life - but there are dangers. e.g. many customer cars are in need of major repairs or in a very neglected state (especially where they have just been bought) resulting in new owners often inheriting a long list of problems needing urgent attention - which they may not be able to afford. Due to this and the age of most of the cars, it is not always easy to estimate the cost of repair in advance.

To help we often work to a fixed price, but this only applies where there are no extra ordinary problems found - such as damage to the associated components or other faults not directly connected to the repair but associated

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with the proper performance afterwards like nuts, bolts and fixtures that are rusty, seized or otherwise impossible to work with without spending extra time on the job etc.

Because we run with low overheads and a low charge out rate, we cannot afford to include the above-unexpected work within fixed price or quoted work unless stated in writing at the time that the job is accepted.

We will absorb most small problems and delays but not major work which will be charged out extra at our normal hourly rate + parts.

If the customer requests that we do no more work than estimated or quoted without their approval - we will obtain this without proceeding but this may delay completion.

Where the customer has set an absolute price limit, but we believe further work is actually required to render the vehicle successfully repaired or generally roadworthy, we then do not accept the responsibility for any subsequent faults that may occur with the vehicle, as our best advice will not have been followed.

We accept most methods of payment including cash, switch, building society cheques and bankers drafts. We also accept credit card payments but add the 3% that we are charged to the bill. We do not accept personal or business cheques.

Bankers' drafts and building society cheques must be cleared by providing information about them to us for verification during banking hours, prior to acceptance. Direct bank transfers are possible and we can check receipt of these on line.

Cars or parts will remain in the care and control of Hartech until all payments are made in full.

Where a repair has been carried out correctly - but an associated part is found faulty - Hartech will not accept liability for any subsequent problems unless the advice or recommendations given at the time have been followed, i.e. tuning or repairing engines that are basically worn out anyway, fitting new pads to worn discs, repairing old electrical parts, welding holes in exhausts etc.

Hartech try to help the owners of older cars by sometimes repairing old parts that would otherwise require more expensive replacement - but it must be understood that in doing so the further serviceable life expectancy of that part cannot be guaranteed.

We do our best to help our customers afford to keep their cars in good running order - but when - despite our best

endeavours - things go wrong and customers are reasonable, we try to adopt a compromising stance and sort the problem out with as little adverse inconvenience or cost as possible.

Our policy is to provide a service for enthusiasts, modestly priced and enabling them to enjoy and afford Porsche motoring.

n.b. We always try to provide a professional and respectful service to customers and to avoid potential problems later, we always try and put agreements or instructions in writing - so there can be no misunderstandings using pre-printed customer order forms with customer copies. However where telephone conversations cover authority for work, we may record such conversations to protect both parties.

HARTECH WARRANTY, GUARANTEE and LIFETIME MAINTENANCE PLAN.

Hartech have always offered their own warranty and guarantee with all cars sold - to ensure that their customers have the option of reliable and comprehensive protection.

The Hartech guarantee is a comprehensive written report describing the condition and specification of the car. This details the work that has been done and the condition of the parts inspected, which should all be satisfactory and serviceable. It is similar to the report that follows a "C" service except that it should not include anything that does not work or that is outside of specifications. It follows closely the information gathered during the sales preparation as listed on page 55.

If the information in this report is misleading or incorrect then Hartech are liable to correct the error at their cost (for which purpose there is no time limit – only what would be seen to be "reasonable"). This means that the car you thought you were buying must be just that – as this description is a contract in it's own right. Very few other dealers (if any) will offer such a genuine method of putting the customers mind at rest about the quality of the car they are getting and that it is as described and confirms all their sales information, in writing.

For example, if the report states that a new water pump has just been fitted, then it would be "unreasonable" if it failed within 12 months and if so Hartech would replace it. If however it failed after 3 years – it would not be unreasonable and therefore either be covered by the Hartech Lifetime Maintenance Plan or repaired at the customers cost (if they are not on the Plan). If a new water pump was not needed at the time of the sale because the existing one was inspected and found to be perfectly OK, but then started

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leaking after “say” 12 months, there will not have been an inaccurate or misleading description in the report, because a perfectly serviceable old water pump can still fail unexpectedly (and it is almost impossible to predict when).

Although it would not then be covered by the guarantee, it would still be covered under the Lifetime Maintenance Plan. Other examples of components that cannot absolutely be tested during sales preparation (unless they have already failed of course), but might be found to be OK but still might fail shortly afterwards, are - Clutch rubber cush drive, Cylinder head gasket, Oil cooler or seals, Torque tube drive bearing, Metal fatigue of gearbox final drive gears, valve springs etc, Electronic control unit (ECU), ABS units & sensors, differential locks, warm up regulator valve etc, inaccessible hoses etc (list for example not exhaustive).

The HARTECH LIFETIME MAINTENANCE PLAN (hereafter referred to as the HLMP). Full details about the origin of this plan, what it covers and its intentions both for Hartech and non-Hartech cars) are described in the later section titled “Background to the Lifetime Maintenance Plan” page 49. The details in brief and the terms and conditions are as follows.

For Hartech Sales Cars. Although Hartech cars have a superb reputation and track record for long-term reliability, there are still some things that can go wrong that no one on earth could possibly have predicted, despite the most thorough checks. Typically these would be items like the above water pump, or parts that cannot be practically checked because they are inside the engine or gearbox.

Similarly, some electronic circuits or electrical motors give no warning of impending failure. If these go wrong after the date of sale then as long as they would not be interpreted as having been the subject of a misleading or inaccurate description in the report, then they come into the sphere of the maintenance plan. This means that the labour to repair them would be covered free of charge but the parts will have to be paid for by the customer.

In grey areas, where no clear position can be found, we will always be as helpful and accommodating as possible to reach a mutually agreeable compromise that is fair and honourable. This is one reason for providing the first three months cover – after the date of sale - free of charge, to ensure everyone is covered against any small problems that may occur soon after collection.

The HLMP is intended to cover three separate items.

(1) Anyone on the scheme receives an annual MOT entirely free of charge.

(2) All the standard services are carried out at the appropriate mileage intervals, entirely free of charge (including service parts).

(3) The internal Hartech labour costs for the repairs for anything that goes wrong with the car (or anything found that has not yet gone wrong, but will do so before the next service interval) – or anything that has worn out through normal wear and tear (or that will wear out before the next service interval) are entirely free of charge. The only costs that the customer should incur will be for the parts that have failed or worn out (that are not normal service items).

The first three months period is included free with the sale but can be extended towards the end of that period by choosing an annual mileage limit and setting up a standing order accordingly (full details and mandate available from Hartech upon request). Options are available for maximum annual mileage’s of 6K, 12K, 18K, & 24K, each providing the relevant number of services completely free of charge (including free service parts), an annual MOT and the labour for all repairs and wear and tear items, for as long as you own the car and continue the payments (with very few exclusions – see page 44).

In addition - if a repair is undertaken that involves the removal and replacement of some parts unrelated to the fault - but that the customer would also like replaced at the same time, then usually these will be replaced free of labour charge, providing the parts are paid for (or for a small additional cost). This would typically be during an engine or gearbox rebuild to correct a small fault perhaps, during which it would be prudent to take the opportunity to fit a few other parts that might not yet be completely worn out, but would save having to do it again in a few years time.

Unlike most Warranties the HLMP **DOES** cover against normal wear and tear of parts and not just against failure. There are no other similar schemes that we are aware of that provide this cover – or get close to the total cover provided. There are no upper cost limits, no age or mileage limits, no limits to the number of claims and no escape clauses or methods of cancellation of the policy - providing the car has been exclusively worked on by Hartech in accordance with it’s schedules, all recommendations have been followed and none of the exclusions have been invoked.

This means that (unlike any other plan) parts can be repaired or replaced under the HLMP **before they fail** - when they are detected as only beginning to go wrong. (Other warranties usually only apply after failure has

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occurred). This reduces the eventual cost, minimises the inconvenience and enables the HLMP to cover serious oil or water leaks etc (not normally covered elsewhere until it is too late) - noisy parts detected before failure occurs and "Grey areas" where a customer is concerned about a problem - that is spoiling their driving pleasure and yet which is still relatively minor. Typical parts covered are all engine problems, gearbox, brakes, transmission, water leaks, steering, wheels, tyres, electrics, interior parts, instruments, auxiliaries etc.

EXCLUSIONS: By offering a scheme that covers almost every eventuality, potentially - for as long as the owner keeps the car - regardless of the total miles covered under the scheme, Hartech's intentions are to provide the most comprehensive and customer friendly back up service available anywhere. The very few exclusions listed are not therefore an attempt to wriggle out of compliance (as many other schemes seem to be) because the whole intention of the plan is to be able to help as many customers in as many situations as at all possible. However - in all fairness to the provider and also because of the very low cost of the HLMP (and bearing in mind that the full costs are being born by Hartech and are not re-insured) - there must be some exclusions listed.

The HLMP cannot cover repairs that **must** be subcontracted - but only those that can be completed within the abilities and facilities of Hartech's own workshops and staff (which are extensive). It therefore excludes complex electrical or electronic work, insurance repairs or bodywork, paintwork, outside sub-contract work, some elements of work on automatic gearboxes, alarms, radios and air conditioning (although it will cover those repairs within the exclusions that it is capable of) and parts.

Also excluded are faults caused by the owner not taking proper care and attention to obvious routine maintenance (like keeping oil and water topped up etc), not returning the vehicle to Hartech within time or service mileage intervals, accident damage, damage caused by a third party, minor oil leaks, collection and delivery, etc. In addition - to protect Hartech from unfair claims - the HLMP will only be valid if:

(1) The car is returned to Hartech at or before the agreed service mileage or monthly interval and that during this routine check any work recommended (whether or not covered by the terms of the HLMP) but that would effect the future performance and reliability of the car must be carried out under the HLMP terms or at the customers cost (where appropriate).

(2) The car must not have any work whatsoever (that is in any way connected to any item being claimed under the

terms of the HLMP or that would reasonably effect the condition of associated parts) carried out by any other party other than Hartech Automotive - or the HLMP may be invalid.

(3) The car must not have been subjected to competition use nor the fault to be related to driving at speeds exceeding the legal speed limits on public roads.

(4) The mileage indicated by the speedometer must be genuine. Since the costs for the scheme are based on mileage covered, there may be customers that decide to disconnect their speedometers to gain an unfair advantage. We record technical information to check authenticity and if we suspect that a car on the scheme has been "clocked" we reserve the right to exclude it from the scheme. However in fairness to all concerned, we will allow a mutually acceptable arbitrator to adjudicate, if necessary.

(5) The nature of the complaint must be "reasonable" (and again a mutually acceptable arbitrator can adjudicate). To explain the need for this clause we should explain - for example - that we have had customers wanting us to completely strip down an engine because they can hear a noise that they do not think should be heard or that they claim was not present when they bought the car. If we in all honesty cannot hear the noise or find it normal for the age and mileage - we cannot agree to such a cost on what we believe to be an uneducated whim. It may also be that the customer hopes for a free engine rebuild once it is apart. It would inflate the prices of the scheme for any genuine claims, if we did not resist such pressures - so while we will do all we can to help customers - we do reserve the right to refuse action where we feel it is inappropriate. If shortly afterwards it became clear that a fault did occur related to the noise and we were therefore wrong to ignore the customers concerns, then we would indemnify them against any additional cost of repair. We would then still charge for the parts that would have been necessary anyway to have repaired the original problem if we had acted when requested, but would indemnify them of any additional parts costs brought about through delaying acceptance of a problem. All this seems typically fair and reasonable.

n.b. Buyers NOT taking up a HLMP (or after it's expiry or after stopping monthly payments) in the event of a problem - will only be protected if the description provided in the Engineers Report is clearly inaccurate, incorrect or misleading, (although in grey areas Hartech will always try and be flexible and accommodating if customers are reasonable).

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Unlike other schemes there are no large initial payments (before you may even know how long you intend to keep the car) and no contracted term – as payments can be stopped anytime by the owner, which automatically cancels the scheme without further costs or come back. However, Hartech do reserve the right to refuse to take back a car on the scheme once it is out of cover or payments have been stopped.

There is a need to cover unexpected problems that were not experienced when the costs were worked out. This is particularly relevant on newer models where they are not yet old enough nor covered enough miles, to find out what any unusual long-term weaknesses are. Since the scheme is costed out to just cover anticipated faults (not leave any additional profit) any unusual common failure that becomes general knowledge in the fullness of time may result in an increase in premiums to cover that new fault. Or as an alternative - the repair of that specific fault may them be excluded from the scheme for those who cannot afford an increase. This above clause will not be put into effect except in very exceptional circumstances where an expensive new and entirely unexpected fault occurs to a lot of newer cars and everyone would be informed of it before they experienced a failure or made a claim.

The MONTHLY costs for the Lifetime Maintenance Plan for Hartech sale cars are presently as follows. (please confirm that these are current at the date of sale. Vat must be added). If models not listed are sold then a special quotation can be offered upon request.

Miles/yr	6K	12K	18K	24K
924 +S	£35	£45	£70	£95
944,box	£35	£45	£70	£95
944S	£35	£50	£75	£105
944S2	£40	£55	£85	£115
944T	£43	£60	£95	£125
968	£40	£55	£85	£115
911 3.2	£50	£65	£100	£135
C2, 4, T	£60	£85	£120	£155
993, 996	£50	£60	£85	£115

It is the intention that the scheme is self-financing with all the income generated paying for all the costs (and a separate account is used for this purpose). If – in the fullness of time – it turns out that the costs are not being met, Hartech reserve the right to increase the scale charges for new applicants accordingly. However Hartech undertake not to increase the costs for those already on the scheme by more often than once per year, or by more than either inflation, interest rates or the cost of living index - whichever is the greater.

In this way we hope to remove the fear of a sudden large repair cost from spoiling the otherwise considerable pleasure of owning a Hartech Porsche - even over many years or high mileage's - by providing small regular affordable payments. Customers considering cash payment options instead of using their company cars will benefit from this ability to budget purchase and maintenance costs closely to run a Porsche instead.

For non-Hartech cars. As soon as this Plan was announced for buyers of “Hartech Cars”, there was a demand for a similar service for cars purchased elsewhere but looked after by Hartech. We considered this carefully because our records showed that on average they were much more expensive to run, over several years, (even if we took out the initial renovation costs) than the cars we originally sourced and sold ourselves. Despite this we have now introduced a similar plan for non-Hartech cars that has been worked out by the same criteria as before.

There are some small changes from the scheme for Hartech cars. e.g. We must obviously reserve the right to turn down some poor cars that have been so neglected or damaged that they would be too unreliable to fit within the costings for the Plan. However, those that we find acceptable will go through our “C” service and if the serious faults that we identify, are repaired by us (and both the “C” service and repairs are paid for in full by the owner) the cars are then eligible for the Plan under almost the same terms and conditions as for Hartech cars. The costs however are slightly higher to reflect the higher maintenance costs that non-Hartech cars have incurred - on average.

The newer the car is (and therefore the sooner we get it on our scheme) the less difference there is in the costs. If it is an older car, however, even after going through all our “C” service recommendations etc, we still found in the past that because private customers do not on average choose such good quality cars to start with, they still cost more to repair and maintain. Due to this, there are some differences between the Hartech and non-Hartech schemes.

Although Hartech cars have ALL known faults corrected, for non-Hartech cars, we will allow those faults, which do not adversely affect any other part of the car or have any other reliability implications, to be excluded and not repaired. Items such as leaky water pumps or rusty brake pipes would not be excluded and must be repaired, as they in themselves could have more expensive consequences if left un-addressed. Items such as a noisy rear wiper motor or a sticky passenger electric window could be excluded from the scheme and not be repaired (either before the car

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is accepted on the scheme or if the fault is discovered during its time on the scheme). However these items could not then be repaired under the scheme later, but only if both the labour and parts were then paid for by the owner.

The HLMP for Hartech cars has been costed out to only cover the costs of the scheme and there is no additional profit element included. This is because we believe that if we have sold a car that subsequently has a problem - that we should not profit from the repair of that problem – consequently our plan for Hartech sales cars, is based on a non-profit generating set of statistics – resulting in it's exceptionally low cost.

These were not too difficult to work out, since we had already carried out all the remedial work before the cars were sold and generally customers for Hartech cars followed all our recommendations throughout – enjoying the exceptional reliability that resulted. So even if we have got the initial charges for the scheme too low - we will accept the resulting slight loss, honouring our agreements fully. This is our way of offering a very generous and valuable, long-term commitment and benefit to those who buy our cars.

However the calculations for the costs of the non-Hartech cars were much more difficult to establish statistically because customers often did not have every fault repaired during their first service, nor all the subsequent ones thereafter. So they not only often bought a car with more faults in the first place, but also suffered the additional financial consequences of not repairing them in good time, as well.

This made interpreting the statistics very difficult indeed and setting the right charges - almost impossible. As a result, the initial charges are unlikely to be as accurately calculated as for Hartech sales cars.

Because of this difficulty in working out the right charges, it may be necessary to alter them after the first year if they are too high or too low. If they are presently too low, increases will have to follow eventually, although those on the scheme will not have any increases levied until they have been on the scheme for a full 12 months.

We hope that there will be no need to increase the charges at all and indeed, if the cars prove to be more reliable than our statistics suggest (which may well be the case), then charges will be reduced accordingly after the first year. However, if the charges prove to be too low and the owners that are on the scheme find the resulting increases too expensive, they can stop the scheme simply by stopping future payments.

Unlike the scheme for Hartech sales cars (for which the maximum possible price increases are limited), Hartech reserve the right to adjust the costs each year by whatever amount proves necessary to cover the costs. Hopefully – they will prove not be too far out (if at all) and have not been adjusted for existing customers since inception.

The MONTHLY costs for the Lifetime Maintenance Plan for NON-Hartech sale cars are presently as follows. (please confirm that these are current at the date of sale. Vat must be added).

Older models, or those not listed, are not presently accepted on this scheme – although they may be considered for a special quotation.

Miles/yr	6K	12K	18K	24K
924 +S	£45	£62	£95	£125
944 box	£45	£62	£95	£125
944S	£50	£67	£100	£135
944S2	£50	£77	£115	£155
944T	£55	£85	£130	£170
968	£55	£65	£110	£140
911 3.2	£65	£90	£135	£185
C2, 4, T	£80	£120	£165	£215
993,996	£55	£65	£105	£130

Why parts costs are not included.

Everyone would like a scheme that included the cost of parts as well, but not the premiums involved. This is why many warranty companies get very awkward about authorising repairs for old cars claiming that the fault must be due to "wear and tear - high mileage or age" which is never covered, so the cost of a scheme that **did** cover parts honourably, for a Porsche, would be much too expensive.

However – paying for the parts is actually a very reasonable position. For example, if two identical cars were for sale, the only difference being that one had just had a new clutch, head gasket and engine oil seals etc and the other had not (because they hadn't failed yet), then the former would rightly cost more. If a customer bought the cheaper one and soon after needed these parts, his car would end up in the same condition as the more expensive one was originally. So – on this basis - it is not unreasonable for him to pay a small amount towards the cost for what will be a better car than it was for many more years and thousands of miles.

Another reason is because our intention is to take all the hassle out of warranty repairs and continue a friendly and helpful relationship with customers despite a problem

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arising with their car. If we had a much more expensive scheme covering parts as well, there would inevitably be some customers that tried to take advantage by asking for things that were not really necessary - like a new engine etc - which - if we were paying for everything - and if we genuinely thought it was unnecessary - we may have to refuse. This would defeat our objective and create friction between the customer and ourselves. Similarly we could expect huge requests for free replacements, just before a car was offered for general sale, that we may have to refuse on the grounds that they were not needed yet. In contrast, if a customer would like a worn part replacing before it was really necessary, we would be unlikely to agree if we were paying for the part, but happy to oblige if they were, since it makes little difference to our labour costs, whether we complete the repair then or in a few weeks time. So by requiring the customer to pay for the parts, they are unlikely to request anything unless it was really necessary and we are less likely to disagree over the timing or necessity. In this way we both manage to control unreasonable claims and carry out all the work that really is necessary at minimal cost and in a pleasant and friendly way that would in our view be impossible if parts were included.

General comments

We always honour our warranty obligations providing they are fair and reasonable - but we do have to be cautious if customers are unreasonable. Fortunately our preparation is so good and our after sales service so comprehensive that we have over the years now built up a huge list of satisfied customers, many of whom have covered over 100,000 miles in one of our cars without major fault (only what we regard as service items such as brakes, exhausts, perhaps a water pump or head gasket once).

So whereas the vast majority add to an ever increasing number of very satisfied customers, pass on recommendations and remain customers for many years and often buy more than one car - we feel that it would be wrong of us to support unreasonable claims - whatever the threats - since these would ultimately be paid for by everyone else.

There are unfortunately some people that rely upon the threat of bad publicity to scare suppliers into buying them off and to achieve a completely unfair repair or compensation for something, which was not even the fault of the supplier concerned. We try so hard to please that we can do without such customers.

Our Lifetime Maintenance Plan is designed to cover the rare misfortunes that are impossible for anyone to predict

or detect in advance (even after the most thorough inspection and preparation) and also all service and normal wear and tear items and we honour them fairly and completely. We are totally committed to providing the best car and the best services, that we can at a reasonable cost, which for most people offers the chance of Porsche ownership without worry, disappointment or high repair costs, with a good re-sale value.

We hope that as a result of the care we take in selecting cars, the skill and integrity we apply when preparing them for sale or working on customer supplied cars and the range and variety of warranty cover now offered, that all our customers will continue to be as happy with their Porsche's as the vast majority of our previous customers have been - because despite any unexpected eventuality - **we are always there for our customers.**

BACKGROUND to the LIFETIME MAINTENANCE PLAN

Working out the costs for the plan and historical comparisons with Hartech and Non-Hartech running costs.

This Lifetime maintenance plan came about because we had noticed that - having very carefully selected a car to buy in the first place (and having discarded many others offered to us) and then having carried out such a thorough refurbishment, it then was quite inexpensive to run, regardless of how many years we looked after it or however many miles it covered. Furthermore, if we eventually bought it back (or more likely part exchanged it for an upgrade), it was still much less expensive to prepare for sale again and incredibly reliable.

Although we had been claiming these advantages of a Hartech car for many years, we thought that we could reflect this confidence by providing a low cost maintenance plan for our customers that will beat our opposition and absolutely prove to everyone the quality of our cars - because if we got the scheme wrong it would cost us a fortune.

So we analysed the figures for a range of typical "Hartech Cars" and non-Hartech cars (often bought from other Porsche specialists) to establish the difference and work out the costs.

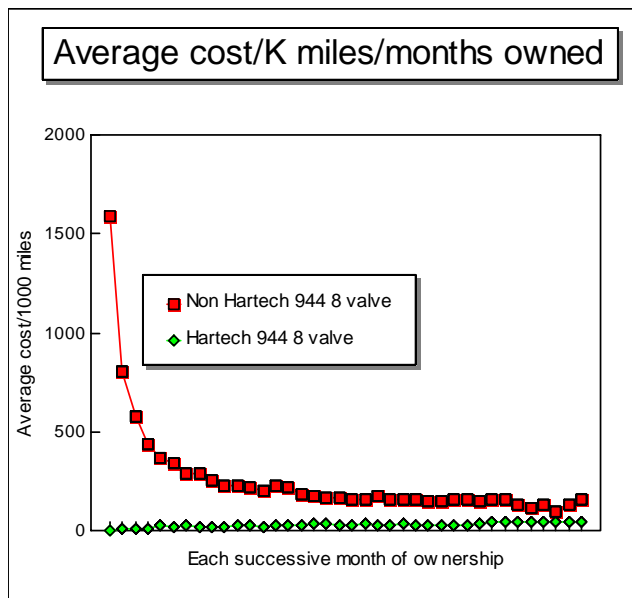
We had to look at all invoices and work out the split of labour and parts for every entry and remove items like "buying a child seat" or "buying 17" wheels" - which were not relevant and would distort the "Maintenance plan" analysis.

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We only intended this exercise to enable us to cost out our new scheme, but the results surprised even ourselves and supported all our arguments about Hartech supplied cars, the basic original quality of the product and the benefits of good preparation and the planned maintenance- provided.

We recorded the running costs (parts and labour) including the service costs, on a spreadsheet chart for each successive month of ownership (or records) and then let the computer work out the cost for each customer for each successive month, divided by the mileage covered to work out the progressive monthly cost of ownership per thousand miles covered. Then all the totals for Hartech and non Hartech cars were added up and divided back by the number of entries each month to create the Average cost per thousand miles per month owned - shown on the following graph 1

Graph 1 example for 944, 8 valve cars.



Since ALL Hartech cars have been fully serviced and repaired (where necessary) before sale, (the costs of which do not then come into these running costs) it is not surprising that the initial costs/month are very low. It is also not surprising that - since most non-Hartech cars that have just been bought need a full service and extensive repairs, that - they are expensive.

What is surprising though is that even after 5 years of ownership, the Hartech car on average still costs only one third to keep running of the cumulative cost of a non-Hartech car. This is a clear tribute to the more careful and professional original choice of car and the very thorough

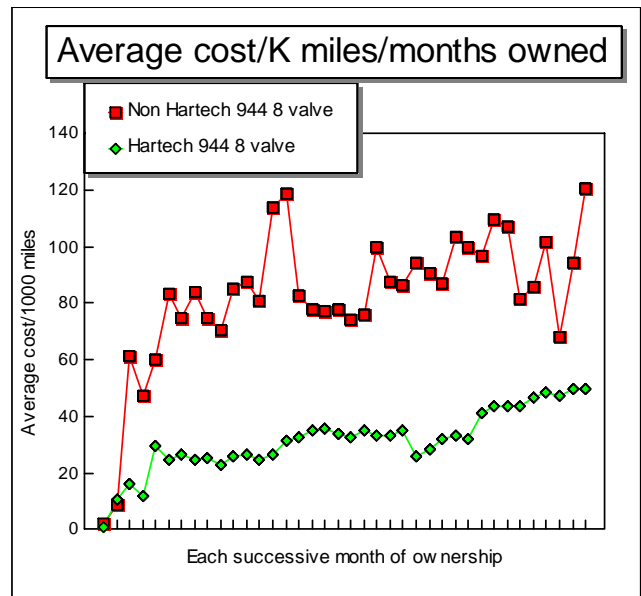
preparation that has been undertaken. It also perhaps reflects that customers with non Hartech cars do not always have everything repaired at once (or early on) often putting up with small problems that eventually need fixing at greater expense later (and it is less expensive to do all the jobs at one time - as we do with our own cars).

This graph also allows the difference in costs to be worked out for a given period and mileage. e.g. A 944 owned for 2.5 years and covering 10,000 miles/year would cost on average £3,025 more if it was a non-Hartech car (plus the costs of hpi checks, painting, wheel refurbishing, tyres etc totalling £4000 to £5000 saved with a Hartech car, which will probably be worth more, be easier to sell and command a higher price). This enables a comparison of the original purchase price of a non-Hartech car and the corresponding value for money to be calculated.

Graph 2 is a similar comparison but after removing the initial cost of the first services from the non-Hartech cars, to compare the running costs thereafter. This shows that non-Hartech cars still cost more to run, justifying some of the increased charges for the scheme. Although these costs are still 250% more than for the Hartech car, we think that some of this is due to customers leaving recommended repairs too long and them costing more eventually.

Since non-Hartech cars will have to have ALL the recommendations followed (or some excluded) before they are accepted on the HLMP, the starting point will be better than our statistics have reflected in the past.

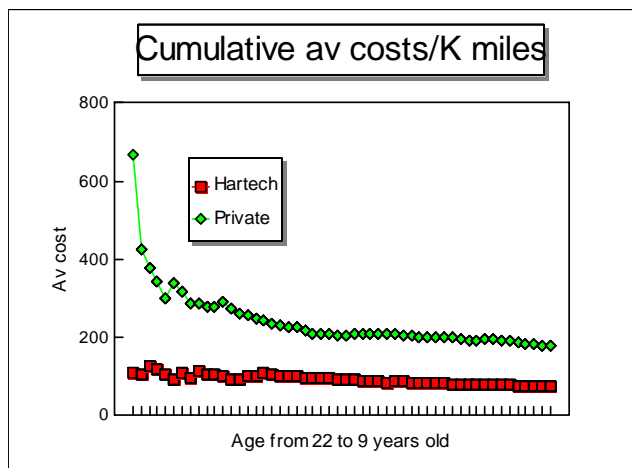
Graph 2



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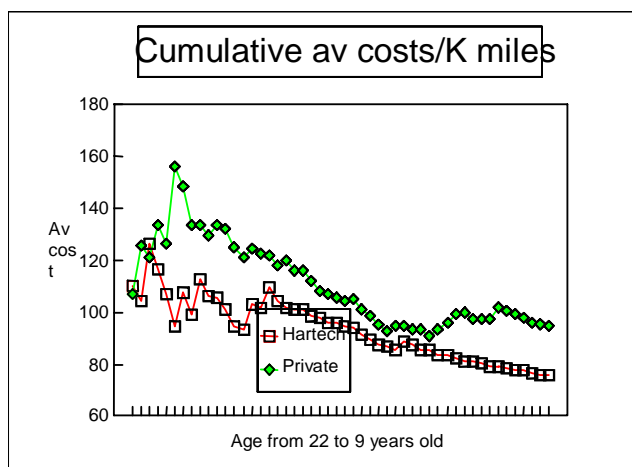
A similar exercise was conducted for all the other models listed. We also used cumulative averages since the individual records varied considerably and would lead to spiky graphs that would be difficult to read. Cumulative averages gradually smooth out results and show a trend, either rising or falling, that is easily recognisable. The following graph 3 shows that that a Hartech car has much the same running cost/1000 miles regardless of it's age being anywhere between 9 and 22 years old and the huge difference for a non-Hartech car.

Graph 3



The following graph 4 is on the same basis as graph 2 (after taking out the initial service and repair cost element from the non-Hartech car). The scale is also different but it still indicates that the public overall - are not as good at selecting a good car as we are (even though they may cost less initially).

Graph 4



This is both a testament to how thoroughly we prepare our cars and of the quality of the original manufacture, that once properly overhauled, serviced and repaired, the mileage has little influence upon overall running costs.

It is also fair to point out that the non-Hartech cars included some that were really bad and therefore inevitably needed a lot more sorting out and still cost more as the lack of care and attention in the past gradually caused more and more components to fail early.

We also compared many other parameters, like the annual mileage covered etc to see if that would influence costs greatly and needed to be accounted for within the scheme.

The results mirrored the previous trend, namely that a Hartech car showed little difference in running costs/1000 miles as the annual mileage increased from 3,000 to 24,000 miles/year, while the non-Hartech cars were always more expensive to run.

These graphs and statistics gave us the confidence to price our scheme for Hartech cars on a price/K miles basis, to disregard the age of the car and the overall mileage it already has covered (or it will cover).

For non-Hartech cars we had to include a slight adjustment for the above differences as age and mileage's increased.

After analysing all the statistics and invoices and trying to make adjustments and allowances for all the anomalies mentioned, the final charges for non-Hartech cars have been set at between about 15% and 40% more than for Hartech sales cars (depending upon the age and model in question).

The analysis also investigated the costs for different models, revealing that the least expensive to run were the 924, 924S and 944 range. Next came the 944S, 944S2, 968 and 993.

The 944 Turbo, while very reliable, is more expensive to work on, resulting in slightly increased charges that do not reflect less reliability.

The 911 3.2 is next (due largely to their older age and design) while the C2 & C4 are the most expensive, mainly due to the additional service time involvement which increases most engine related repair times compared to other models.

The types of service and MOT etc and the intervals between them that we have accounted for in the scheme free of all charges are listed in the following chart. By

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selecting the annual mileage first, the type and frequency is then indicated.

Mileage and service interval chart

Months	6K	12K	18K	24K	MOT
3				A	
4			A		
6		A		B	
8			B		
9				A	
12	B	B	A	C	1
15				A	
16			C		
18		A		B	
20			A		
21				A	
24	B	C	B	C	1
27				A	
28			A		
30		A		B	
32			C		
33				A	
36	C	B	A	C	1
39				A	
40			B		
42		A		B	
44			A		
45				A	
48	B	C	C	C	1
51				A	
52			A		
54		A		B	
56			B		
57				A	
60	B	B	A	C	1

Of course all this (and the Lifetime Maintenance Plan) are only relevant to those who cannot (or are disinclined to) carry out the service, repair and remedial work (or some of it) themselves. Such owners are particularly vulnerable because practical home mechanics can at least reduce the cost of a badly bought car or sudden expensive failures by doing the repair themselves.

Owners that have to rely on garages and specialists can both buy a bad car and select a poor repair workshop – the combination of which can cost a small fortune.

Our plan is designed for such owners and enables a low monthly budgeted figure to cover most costs including the unexpected disaster - which puts off many potential owners in this category. The only additional costs to the

monthly fee are likely to be for parts that will improve the quality and long-term value of the car anyway. Many other sales outlets and schemes claim all sorts of benefits, but – if you read into them carefully – you will find that most have get out clauses or limits that provide the potential to cover very little indeed. This problem is one of the biggest difficulties for prospective buyers who can read all sorts of possibly conflicting stories and be subjected to different competitors sales talk (to secure your business), all of which often leaves you wondering what and whom to trust.

We back up our claims with this scheme, because we know that our claims are true and our plan is unbeatable, but for those sceptical potential customers, who are still unsure, perhaps you should consider that only we have put **our money where our mouth is** by offering this Lifetime Maintenance Plan to all our customers.

We also openly publish all our terms and conditions (and no small print) so they are in black and white and they bind us absolutely. Ask yourself if any one else is backing up their reasons for buying from them or using them for services and repairs with such a confident, low cost personal scheme.

These figures have been generated from cars that we have **fully serviced** etc, so that is why, we include the full cost of all the servicing (including all the service parts, oils filters etc) and the annual MOT as well – to ensure that the same care and attention is always applied to cars on our scheme and the resulting reliability is as good.

When a car is being serviced elsewhere, it must be very difficult for the owner to know whether a job being recommended really is necessary or not, or if the advice is motivated to increase business.

Although we only ever advise what we honestly believe to be in the customers best interests - with this new scheme - the customer will **KNOW** that we would hardly be likely to recommend something that costs us money unless we really believe that in the long run both we and the customer will save money overall by completing essential work at the right time. We would also be stupid to ignore something that will cost us more to repair if we leave it too long.

So while it would be against our interests to recommend anything that is not necessary it would also be against our interests to put off anything that will eventually cost more to fix. This - for the first time - puts both the customer and us, in the same boat, both seeking the least expensive way to achieve the best reliability possible.

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THE HARTECH “TRADE SALE” PORSCHE SCHEME

The “**Hartech TRADE SALE Porsche**” scheme covers cars that may become available under four different scenarios, all-resulting in the same outcome – a lower price for a car that is less of a risk to buy than on the open market. Every Hartech sales car (in any category including this one) has been checked against records for accident damage, outstanding finance, etc and has been road tested and inspected and deemed as a sound car in reasonable condition.

We do not buy or part exchange any cars that we know to be accident damaged or in such a poor condition that they would be a bad buy for anyone. It will not however undergo our pre-sales preparation, nor be accompanied with an engineer’s report, nor be eligible for the “Lifetime Maintenance Plan”; instead it will be offered at a much lower price on an “as seen trade sale basis”.

This means that the buyer has to accept it with all its faults and no comebacks. This wording “with all its faults” does not mean that there are hidden faults that we know about but are not declaring – because we would always let any prospective buyer know about anything that we have discovered. Instead it is just a legal way of wording things so that it is clear that the buyer is accepting faults if any exist or emerge – as part of the sale contract (this does not affect your consumer rights for a Trade Sale contract). The car can still be booked in for a “C” service and following this can still be eligible for the “Lifetime Maintenance Plan” @ “NON-Hartech prices”.

(1) The first scenario will suit customers who do not expect an absolutely perfect car and want to carry out some work themselves. Consequently they have no interest in the “Lifetime Maintenance Plan”. It is suitable for older Porsche’s that may have been taken in part exchange, are basically straight and sound but not worth while (or borderline and undecided) for Hartech to fully restore. This will usually cover cars that are typically over 10 years old and under £10K.

Main dealers rarely sell such old cars and many of the leading independent suppliers have moved up market. This is due to the simple fact of life that the older a car becomes, the more it costs to restore it to tip top condition. Although we have explained much of the following points in earlier sections – it is worth repeating for those who may have skipped those sections and have come straight to this one.

Background to the reason why older cars become problems to conscientious dealers.

Typically – during our sales preparation - we may spend £1K on a £35K car, £2K on a £10K car and £3K on a £5K car (3%, 20% and 60% of their value respectively). An even older model worth £1K may need £4K spending on it to make it perfect again – 400% of its value (and so the seller would have to pay the buyer at least £3K to take away the car for it to become a viable proposition).

This clearly demonstrates that there comes an age where they simply price themselves out of the market as it becomes impossible to source a good car cheaply enough to fully restore it and then price it competitively. Many buyers want to restore an older car themselves or pay specialists to do only some of it. However this doesn’t necessarily ensure that the original car they bought, was a good investment, or priced properly and they take a risk over it’s condition since they do not find out the true story until it is fully checked over - after they have paid for it.

As Porsche’s age - their condition starts to noticeably vary after about 5 years old. Up to 5 years old – the lack of care in some service centres – while not necessarily affecting the main integrity of the car – does start to show in small areas of neglect. These will still be fully recoverable by a more thorough specialist, but if maintenance is then done on the cheap for a few more years, it starts to show in more major areas. So nice examples with popular specifications are expensive and consequently bought by those seeking the best and prepared to pay for it.

They are therefore subsequently well looked after – maintaining their high value. In contrast, those with less to spend - buy a rougher example of the same year car (or one that is cheaper because it is already of a less popular colour or specification) and then don’t look after it properly. When a Porsche is quite new there are many who are desperate to be seen in the latest car who cannot really afford it. These will buy a cheaper example in a slightly unpopular colour or specification – just to be seen in the latest example. When they get older there is more choice on the used car market and buyers take more time selecting their next car. Although – for them – it is still an expensive car and a serious purchase, the newness has worn off the car and is not quite so important anymore as a status symbol, but more so as a drivers car.

Those with less to spend are also perhaps more interested in long-term values and depreciation than

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those who can afford a nearly new example. So with the car being older now the unpopular colours and specifications take longer to sell and their value falls even more. When this car is next sold - its condition is even worse, its specification makes it increasingly unpopular and therefore its is priced even lower. It is then only going to be bought by someone looking for a cheaper example of that year's car and it is looked after even more cheaply next time.

In this way most cars follow a repeating cycle. Good specifications and well looked after (but comparatively expensive) or poorer specifications increasingly badly looked after but cheaper). So as the years go by – the difference in, price, value and saleability - between originally similar cars - becomes ever greater as the quality “diverges”. Most dealers (Porsche specialist or otherwise) will still part exchange a nice, clean - older Porsche with a popular specification and if it is too old for them to retail directly, will dispose of it, through small car dealer networks or auctions. But they cannot dispose of the rougher unpopular-examples, leading to these cars occupying most of the media advertising.

Therefore the private sale prices published (upon which the public base their value judgements) are usually well below the true market value of a nice, well looked after example with a popular specification – that is rarely privately advertised. Most buyers of a Porsche over 10 years old and under £10K use this advertised source without realising that it is usually a list of predominantly unpopular or rough cars. Eventually when they come to sell the car they realise then that their original decision to purchase has now cost them a lot to restore and then become almost impossible to dispose, due to poor history or unpopular specifications, often costing much more than they expected.

We used to exclude 924's pre 1986 944's and pre 1985 911's from our sales portfolio - because we didn't want to lower our standards. We found it impossible to buy a nice car, restore it to our usual high standards and price it competitively compared to generally advertised prices of far inferior examples (for reasons described above) – and which the public incorrectly assume are average prices that set a fair market price. However our customers encouraged us to reconsider this policy when many expressed an interest in these older models. When we explained WHY we no longer sold them – they frequently replied that they didn't expect them to be like new but still wanted the main Hartech checks and benefits.

They still wanted to buy a car that was properly researched and deemed a good car by us, but didn't

seem to expect the paintwork and interior to be absolutely perfect nor for the minor imperfections to be sorted out. Indeed many had come from the more traditional “Classic Car” experience of MGB's etc and actually enjoyed sorting out smaller imperfections at home, but were concerned about the history of a car and such comparatively “new” technicalities of, fuel injection, computerised engine management systems and aluminium cylinder blocks etc.

The “HARTECH TRADE SALE Porsche SCHEME” addresses these problems by providing a car that is as thoroughly researched as our newer cars. This gives the buyer the option to buy a sound older Porsche, with a popular model specification, well looked after, probably with a few faults (many of which will be reported) for consideration – and at a much more competitive price than if we had carried out all the repairs and refurbishment to our usual standards before hand.

(2). The second category of car that is suitable for the scheme comes about when a newer Hartech car has recently been fully prepared for sale. The new owner then only keeps it for a short time or minimal mileage before some personal reasons (not in any way associated with the quality or suitability of the car nor their complete satisfaction with it) require that it is sold unexpectedly soon. This may be typically due to personal or family illness or bereavement or sometimes to finance a hot business or investment opportunity. The car has already been fully researched and thoroughly prepared for sale and doesn't really need to be thoroughly serviced and overhauled again – but equally cannot be guaranteed or taken on the “Lifetime Maintenance Plan” without. It is therefore suitable as a very low risk buy for someone who is not interested in the “Lifetime Maintenance Plan” (or lives too far away to benefit from it) and wants to buy a probably perfect car needing nothing spending on it for some time - at a lower price. The price difference will not – in this case – be as much as a higher risk car – but still represents a significant saving option.

(3). The third category is when a “Hartech” car – that was sold some time before – has perhaps covered a higher mileage but has been looked after by Hartech at service intervals etc and comes back for re-sale. It might by then have aged to become too old for the current Hartech range (as that moves up every few years) and may have deteriorated a little in some unimportant areas – but it was originally fully researched and thoroughly prepared and Hartech are aware of any mechanical or cosmetic imperfections that they no longer want to address on a car that is now older and of lower value. It

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will however still be a much better car and a much safer choice than one chosen in the open market.

(4) The fourth category is when a fairly new Porsche with a reliable full service history, becomes available and is unlikely to be old enough or high mileage enough to harbour any serious faults. Although it will benefit from the Hartech preparation, never the less, there are some circumstances in which Hartech would consider a lower trade sale price. For example - for anyone living some distance away or who does not intend to take up the Lifetime Maintenance Plan option and perhaps already has a local Porsche specialist that they trust – they may prefer the initial service and preparation to be carried out by them locally – so that they get to know the car from the outset. This makes perfect sense to us and in this case a lower price on an “As Seen” basis may be agreed.

Some cars may be in a grey area where it is not clear what is the best direction to follow and may be offered with 2 prices covering the normal sales preparation as a Hartech car or on a Trade Sale basis – as a less expensive alternative – or negotiation may result in some other mutually acceptable arrangements. Hartech will not negotiate on the advertised retail price of a full Hartech prepared car – as the quality of preparation and back up services - is so high – and the price so competitive – that it leaves no room for any further negotiation without compromising the quality of preparation that we refuse to consider. However any other suggestions are always welcome. Furthermore we will offer our stock of good used and new spares to all such purchasers, together with technical advice etc, to enable them to still enjoy the experience of Porsche motoring - safely and reliably with older cars at the lower end of the market.

In this way we can help those seeking an older but never the less sound car (or who do not intend to take up the “Lifetime Maintenance Plan” or who do not require a report or guarantee) or simply want to work on it themselves - to be more confident in their choice, (avoiding typical pitfalls) at a much more competitive price. By adding the HARTECH TRADE PORSCHE CAR SCHEME to our innovative range of services we hope to reinforce our commitment to satisfy our customers needs in an area largely abandoned by many of our competitors or those for whom the “Lifetime Maintenance Plan” is not required. To keep all the above options open – Hartech do not now fully prepare cars for sale until the exact terms of the sale – and all the above options – have been agreed.

HARTECH PORSCHE in SPAIN.

Several British customers have been taking advantage of the thorough preparation at Hartech to prepare a LHD Porsche to take to Spain for use in retirement. Although Hartech do not usually sell imported LHD Porsches (due to the difficulty in verifying history) there are many LHD cars that were brought new in the UK for which history is fully traceable and some imported cars that are clearly are not hiding a problem. Hartech are presently considering preparing good examples of these for overseas use and are also investigating the possibility of arranging collections to bring them back to the UK for bi-annual service and even setting up a small but permanent Spanish operation – to handle minor problems over there. This may also include a holiday hire operation of LHD Porsche's. These developments are presently in their infancy but are being actively pursued and the outcome will be reported in the future – meanwhile - watch this space.

IN CONCLUSION

We hope that the contents of this guide have proved useful and helpful. There are many conflicting sales ploys and adverts, recommendations and claims made by various organisations about Porsche's and their services. Our intention has been to inform you about as many aspects of the Porsche experience as we can, warn you about the many dangers that exist and also to inform you about ourselves. You may well find all this confusing and not know who to trust, so perhaps the final consideration to all the information contained within this guide should be to imagine the time and effort that has gone into it's production and our willingness to provide a copy free of charge, even if we never hear from you again.

Add to this the **Lifetime Maintenance Plan** that we offer, that could only possibly be viable if all our claims about the virtues of a good and well - prepared Hartech car (or a fully sorted out non-Hartech car following a “C” service that is properly looked after), are true. Finally, we would like to invite you to visit us and take a look for yourself and see if there is any way we can enhance the prospect of you really enjoying your Porsche experience to the full.

MOTOR INSURERS that may be worth obtaining a quotation from are: - Peart 01539730666,
Heritage 01212466060,
Osbourne 01816412016,
Nowell & Richards 01785 255514.
Jardine Faber 10604 639011
Performance Insurance 07000 911 966
Footman James 0121 561 4196
Carole Nash 0800 298 5566

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Hartech Automotive - Porsche 944 - 12000 Mile Service Schedule TYPE C

n.b. This example is to show the thoroughness of our services and records. Usually it is printed in large letters on several pages leaving spaces between all items for engineer's notes and comments. Figures replaced with ** are to avoid confusion.

Vehicle Details

- 1) Registration Number:
- 2) Chassis Number:
- 3) Year:
- 4) Delivery Mileage:

Initial Road Test (With Customer if available)

- 1) Check Oil Pressure Reading.
- 2) Check For Vibrations.
- 3) Check Clutch Rubber Not Sheared.
- 4) Check Engine Running Temperature.
- 5) Listen For Gearbox & Wheel Bearing Wear.
- 6) Check Turbo Functioning Correctly.
- 7) Test General Perf. & Handling (Steering, Suspension, etc).
- 8) Check Brake Efficiency.
- 9) Check Kick-Down Function (Automatic).
- 10) See If Pedal Free Play Needs Adjusting:
- 11) Check Water Pressure For Signs Of Cylinder Head Gasket Leakage.
- 12) Check Header Tank For Signs Of Oil Cooler Leakage.

Engine Area

- 1) Check Level & Condition Of Old Oil.
- 2) Remove Old Spark Plugs & Inspect For Abnormalities.

Perform Compression Test.

Cylinder 1: Psi Cylinder 2: Psi Cylinder 3: Psi Cylinder 4: Psi

- 3) Visual Inspection For Oil Leaks.
 - 4) Visual Inspection For Coolant Leaks & Check Condition Of Radiator.
 - 5) Check Throttle Switch Activation. Check Cable Adjustment & Throttle Pedal Adjustment - Adjust If Necessary.
- Apply Grease To Cable @ Throttle Switch. Apply Grease To Spring.
- 6) Change Air Filter & Clean Out Housing.

- 7) Check Tension & Condition Of Alt & P/S - Adjust If Necessary.
- 8) Check Camshaft, Crankshaft, & Balance Shafts Timed Correctly.
- 9) Remove & Check Tension & Condition Of Cam & Balance Belts - Adjust If Necessary.

Check For Roller Wear (Remove Rollers To Check).

Check For Water Pump Leakage. Clean Covers & Check For Any Debris

In Casing Area. **Check & Clean Rotor Arm & Distributor Points.**

Check Rotor Arm Dust Cover Present. Condition: Cam Belt: Balance Shaft Belt: Cam Belt Tensioner Gear: Balance Belt Tensioner Gear: Cam Belt Idler Bearing: Balance Belt Idler Bearing: Rotor Arm: Distributor Cap: Water Pump:

- 10) Change Oil & Filter. (Oil Drain Plug ** lbsft)
- 11) Turn Engine Over To Get Oil Pressure.
- 12) Fit New Spark Plugs. (** lbsft)
- 13) Check Condition Of HT Leads.
- 14) Check Cond. Of accessible Hoses & Pipes.
- 15) Check Tightness Of accessible Pipe & Hose Connections.
- 16) Check Level & Condition Of Coolant. Check Anti-Freeze Content - Correct If Customer approves: Anti-Freeze OK To:
- 17) Check Level & Condition Of Screen Wash - Top Up If Necessary.
- 18) Ensure Air Filter Intake Pipe Grommet Fitted Correctly. Engine General Condition:

Tyres & Wheels

- 1) Check Tyre Pressures - Adjust If Necessary. Set To ** Psi Front ** Psi Rear.
 - 2) Check Tyre Depth & General Condition. Off Side Front: mm Near Side Front: mm Off Side Rear: mm Near Side Rear: mm Spare: mm
 - 3) Check Play In Front Wheel Bearings - Adjust If Necessary.
 - 4) Check For Play In Rear Wheel Bearings.
- Condition Of Old Plugs:
- 5) Check General Condition Of Wheels.

Brake System

- 1) Remove Brake Pads, Free Up, & Clean. Measure Disc Thickness & Inspect For Cracks.
- Off Side Front Pads: off side Front Discs: mm Near Side Front Pads: Near Side Front Discs: mm Off Side Rear Pads: Off Side Rear Discs, Near Side Rear Pads, Near Side Rear Discs: mm
- 2) Clean Brake Pipes + Hoses, Check Corrosion, Damage & Rubbing. O/S Front: N/S Front: O/S Rear: N/S Rear: Central Pipes:
 - 3) Check Handbrake - Adjust If Necessary. Firstly, Wheels Then Cable. Handbrake Cable: Handbrake General Function:

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- 4) Check Brake Pedal Free Play - Adjust If Necessary.
- 5) Check Level & Condition Of Brake Fluid - Top Up If Necessary.
General Condition Of Brakes:

Transmission System

- 1) Check For Gearbox Oil Leaks.
- 2) Check Clutch Plate Not Sheared.
- 3) Check For Wear In Differential Bearings.
- 4) Check Level & Condition Of G/box & Diff Oil - Top Up If Necessary.
Gearbox Oil:
- 5) Check Condition Of Transmission Joints. Check Bellows OK.
Near Side: Off Side:
- 6) Check For Leakage's From Clutch Cylinders. Master Cylinder:
Slave Cylinder:
- 7) Measure Clutch Disc Thickness.
- 8) Check Clutch Free Play - Adjust If Necessary.
- 9) Check Level & Condition Of Clutch Fluid - Top Up If Necessary
Transmission General Condition:

Steering System

- 1) Check For Power Steering Fluid Leakage's.
- 2) Check Condition & Level Of P/S Fluid - Top Up If Necessary.
- 3) Check For Wear & Play In Ball Joints, T/Rods & Ends, & S/Rack.
Rack: Track Rod Ball Joints Wishbone Ball Joints: Track Rod Ends:
- 4) Check Rubber Boots Not Damaged: Rubber Boots:
- 5) Check Steering Shaft Universal Joints For Play.
Top U.J.: Bottom U.J.:
- 6) Check For Loose Connections.
Steering General Condition:

Suspension

- 1) Check For Damper Play/Wear/Leakage.
- 2) Check For Loose Connections.

Front Suspension General Condition:

Rear Suspension General Condition:

Exhaust System

- 1) Visual Inspection For Leaks & Damage.
- 2) Check For Loose Connections At Manifold & Rest Of System.
Rear Pipes & Box: Central Pipes & Box: Downpipes: Manifold:

Fuel System

- 1) Check For Loose Connections, excessive corrosion, perished rubber,
- 2) Change Fuel Filter (or report to supervisor if corroded and likely to cause expense of replacing connecting pipes). If agreed with customer - test flow and if OK leave in place

Electrical Systems

Check:

Window Mechanism:, Wing Mirrors: Heater: Oil Pressure Gauge:

Fuel Gauge: Brake Gauges: Charging Circuit: Windscreen Washers:

Front Windscreen Wipers: Rear Wiper: Battery: Alternator: Starter Motor: Boot Release: Electric Seats: Horn: Headlamp Washers: roof:

Rear De-Mister: Cigar Lighter: Central Locking System: (From

Both Door Locks & Button) Lights: Front Headlights:

Dipped Main Beam Front Side Lights: Front Spot Lights (In Bumper):

Front Indicators: Additional Front Fog Lights: Side Repeaters:

Rear Side Lights: Reversing Lights: Rear Fog Lights:

Number Plate Lights: Rear Indicators: Interior Courtesy Lights:

Dashboard Lights: (+ Activation From All Switches)

Aesthetics

General Bodywork: Rust: Glass: Scratches: Dents: Interior Trim: Seats: Carpets:

General Functions

- 1) Lubricate Door Hinges, Boot Hinges & Catches, & Door Straps.
- 2) Lubricate Seals On Doors, Boot, & Roof. Check For Damage.
- 3) Check Door Stay Straps Not Loose - Tighten If Necessary:
- 4) Check Locks Work Correctly.
- 5) Check Seat Belts Work Correctly & Check For Wear.
- 6) Lubricate Pop-Up Head Light Mechanism.
- 7) Check Direction Of Screen-Wash Jets.
- 8) Check Screen Wipers For Wear.
- 9) Check Battery Water Level.
- 10) e Check Tool Kit & Compressor Present.
- 11) **FOR OUR SALES CARS:** Check All Control Knobs, Carpet Clips, Seat Levers, Etc Present.

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12) **FOR OUR SALES CARS:** STEERING GEOMETRY CHECK

13) **Torque Up Wheel Nuts. (**LbsFt)**

Post Service Road Test

1) Check Oil Pressure.

Oil Pressure Reading When Hot Ticking Over:

2) Check General Performance & Handling.

3) **FOR OUR SALES CARS:** Check For Excessive Rattles, Etc

Engine Hot

1) Re-Set Mixture & Tickover.

2) Check Cooling Fan Works.

Miscellaneous

1) Wash Car & Clean Windscreen.

2) Empty Ash Tray.

3) Sticker In Engine Bay.

4) **FOR OUR SALES CARS:** Sticker In Rear Hatch

5) **FOR OUR SALES CARS:** New Number Plates

6) Stamp Up Book.

7) Re-Check Engine Oil Level.

8) **FOR OUR SALES CARS:** Check MOT Expiry Date & If Less Than 6 Months Re-New.

Technician Name & Signature _____ Date _____

Notes:

From these records it is clearly demonstrated the attention to detail that is meticulously followed by Hartech during routine servicing. Many other providers change little more than oil and plugs whereas a service of this complexity demands at least a full day (often more) to complete. The benefit is the exceptional reliability and low running costs that such preventative maintenance achieves and that is ideally suitable (some would say essential) to look after a Porsche correctly. The hard copy and computer generated records that follow, provide an invaluable resource for future reference.

The schedule is different (but similar) for all models. It is usually written on larger printed sheets, spaced out properly and all comments are recorded and permanently filed. A Computerised report is generated from the service schedule and is recorded against the registration number as a permanent record available for rapid recall during customer telephone conversations if required. At any time a complete report on all the work done on customer cars and all outstanding work and recommendations can be extracted from the computer to provide printed sheets available for future reference.

Customer details are protected by the Data Protection Act until they have "sold on" the car, at which point we feel it is fair (if asked) to inform the new owner of the background to a car and it's history - thus assisting future planned maintenance. Any customer wishing to protect any information whatsoever about their car, arising during their ownership, can permanently achieve that by writing to us.

Fuel filters are not necessary (nor listed by Porsche) for every service and sometimes are not replaced if local seized pipework would fail adding hugely to the cost. In these circumstances the fuel flow is tested and if Ok the filter may be left unchanged.

All prices listed were correct at the time of print but may have been altered due to parts or exchange rates changes, changes in hourly rates or general cost of living rises imposed after the printing of this document. Customers should always check current prices when placing an order or authorising work. Usually the price is discussed anyway – with the customer – before any work commences – but this is not always possible.

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HARTECH AUTOMOTIVE

PERFORMANCE COMPARISON TABLE

Model	Eng size	Type	Valves/cyl	Speeds	Type	0-62 mph	Top speed	Bhp
911 Turbo	3300	6 cyl	2	5	Man	5	168	320
996	3387	6 cyl	4	6	Man	5.2	174	300
993	3600	6 cyl	2	6	Man	5.6	168	272
964 C2 & C4	3600	6 cyl	2	5	Man	5.7	162	250
968 Sport	2900	4 cyl	2	6	Man	5.7	162	240
944 Turbo	2479	4 cyl	2	5	Man	5.9	162	250
Boxster S	3179	6 Cyl	4	6	Man	5.9	156	252
996 Tiptronic	3387	6 Cyl	4	5	Tip	6.0	171	300
3.2 Carrera	3164	6 cyl	2	5	Man	6.1	152.3	231
944 Turbo	2479	4 cyl	2	5	Man	6.3	153	220
S2 Road & Track test	2900	4 cyl	4	5	Man	6.4	N/A	211
Boxster S Tiptronic	3179	6 Cyl	4	5	Tip	6.5	153	252
968 Coupe	2900	4 cyl	4	6	Man	6.5	157	240
924 Carrera GT	1984	4 cyl	2	5	Man	6.5	150	210
993 Tiptronic	3600	6 cyl	2	4	Tip	6.6	165	272
964 C2 & C4	3600	6 cyl	2	4	Tip	6.6	158	250
Boxster 2.7	2687	6 Cyl	4	5	Man	6.6	150	220
Boxster 2.5	2480	6 cyl	4	5	Man	6.9	149	204
S2	2900	4 cyl	4	5	Man	7.1	149	211
Boxster 2.7 Tiptronic	2687	6 Cyl	4	5	Tip	7.4	147	220
Boxster 2.5 Tiptronic	2480	6 cyl	4	5	Tip	7.6	146	204
924 Turbo Mk 2	1984	4 cyl	2	5	Man	7.7	143	177
968 Tiptronic	2900	4 cyl	4	4	Tip	7.9	154	240
944S	2479	4 cyl	4	5	Man	7.9	142	190
944	2479	4 cyl	2	5	Man	8.5	137	163
924S	2479	4 cyl	2	5	Man	8.5	134	150
924	1984	4 cyl	2	5	Man	9.6	126	125

These figures are for comparison only and have been obtained from a variety of sources. We do not claim that they are absolutely accurate nor that any model listed - will necessarily achieve the figures quoted. They are usually obtained by testers familiar with optimising wheel spin etc that the public would find difficult to match. Although the tiptronic versions seem comparatively slow in the table (because they are taken from a standing start), once mobile (over say 20mph) the acceleration is comparable (or even better on occasions as they automatically change up at peak revs, enabling optimum changes during full concentration on steering control - to be applied).

