

SPEEDWELL

PERFORMANCE CONVERSIONS LTD

"MANUFACTURERS OF COMPONENTS FOR SPEED WITH SAFETY"

SPEEDWELL CENTRE,
CORNWALL AVENUE LONDON N3
TELEPHONE: FINCHLEY 7866
TELEGRAMS: SPEEDERCON LONDON N3

January, 1963

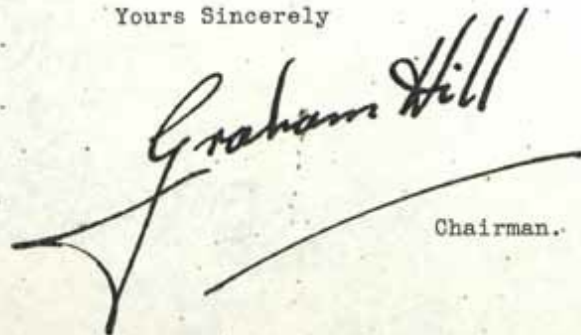
Dear Customer,

Here it is - the first Speedwell Catalogue and in fact the first Speedwell Equipment Catalogue ever produced in this part of the hemisphere.

We hope to make it an annual issue, not only giving you the latest details of our equipment but up to date technical information on current tuning trends.

We take our business very seriously and I hope that you will find, when using our products, that we do indeed offer the Best Engineered Speed Equipment and Special Accessories.

Yours Sincerely


Chairman.

SPEEDWELL

PERFORMANCE CONVERSIONS LTD

"MANUFACTURERS OF COMPONENTS FOR SPEED WITH SAFETY"

SPEEDWELL CENTRE
CORNWALL AVENUE
LONDON N3
TELEPHONE: FINCHLEY 7866
TELEGRAMS: "SPEEDERCON" LONDON N3

January 1964

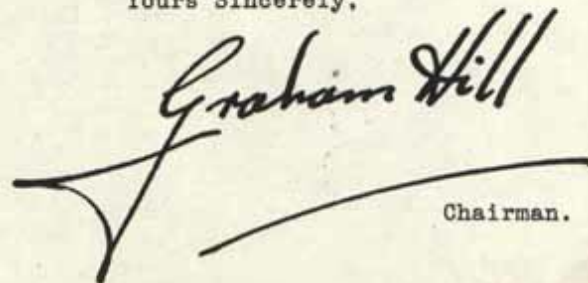
Dear Customer,

Here is your Speedwell Catalogue and in fact the only Speed Equipment Catalogue of its type ever produced-more than 10,000 copies are already in the hands of enthusiasts all over the world.

Every year we will make it more comprehensive, not only giving details of our own equipment but up-to-date information of current developments and tuning trends. To receive these additional sheets, please complete the appropriate form in the price list section.

We take our business very seriously and I hope that you will find, when using our products, that we do indeed offer the Best Engineered Speed Equipment and Special Accessories.

Yours Sincerely,


Chairman.



Design and Production

Speedwell's "Best Engineered Speed Equipment" is not an idle claim. Since its inception, the conversion field generally has suffered from equipment badly designed—if designed at all—poorly made and technically unsound. From the very beginning, Speedwell has worked on the principle that tuning equipment cannot be made 'on the cheap' and the principles of sound engineering design must be rigorously applied.

The methods used by Speedwell are similar to those of the motor manufacturers except that the specialisation and smaller quantities involved result in great flexibility to adopt new ideas and greater scope for individual craftsmanship. Wherever possible, Speedwell products originate on the drawing board and are first made as prototypes

which are extensively tested and proven before being finalised for production. This policy has resulted in confidence in the product which is expressed in a full 12-month guarantee.

Whilst the bulk of production is spread over a number of factories, many of the key operations are carried out at the Speedwell Centre itself. In a specially equipped machine-shop finishing operations are carried out on many engine components including the well-known alloy cylinder-heads. One unique operation is the reproduction of complex combustion-chamber shapes by a process of three-dimensional pantographic milling. Machines cannot, of course, replace manual skill when it comes to intricate finishing operations on cylinder-head porting, but in this, as in all other respects, Speedwell's team of experts are second to none.



Speedwell Performance Conversions Ltd., London, England

Many customers of Speedwell have only a vague idea of the nature of the organisation with which they deal. Speedwell is sometimes imagined as a branch of the British Motor Corporation, sometimes as a Racing Stable, sometimes as just a stable! In fact, Speedwell is none of these, it is an independent company bringing together under the chairmanship of champion driver GRAHAM HILL, a team of experts on various aspects of performance equipment. This 'look around' will give a better idea of how Speedwell works and how it can help you.

Steering the Speedwell group from the Managing Director's desk, LUTZ ARNSTEIN controls an organisation which is at your service for any requirements connected with speed equipment from supplying a wing-mirror to sending a fully equipped racing saloon to a far corner of the world. An expert on all facets of the business, Lutz travels vast road-mileages in converted cars, covering the continent of Europe for the export of Speedwell equipment and bringing back choice items for the UK market. In addition to running Speedwell's administration, Lutz deals personally with the hundreds of import and export enquiries that come in half a dozen languages from all over the world.



Speed Equipment Sales

In Great Britain, Speedwell equipment can be obtained in a number of ways—over the counter at the Speedwell Centre, through Halfords, accessory shops and garages. The organisation that makes this possible is run by Sales Manager PETER EVA. Backed by his experienced stores and office staff, Peter deals with the great flow of enquiries arriving daily as well as maintaining contact with garages and Speedwell Stockists up and down the Country. He is, of course, an enthusiast; convinced that there is nothing quite like a well converted car. Furthermore, Peter is a saloon-car racing driver of considerable ability who has held saloon-car lap records at Brands Hatch with a Speedwell Mini. Advice on any aspect of speed equipment and its application is freely available from Peter Eva and other expert members of Speedwell staff. 'The right equipment for the purpose' may sound rather obvious but it is an essential first step to good results and one in which the Speedwell sales organisation can help you. In the equipment showroom at the Speedwell Centre a wide selection of equipment is available for examination, discussion and immediate delivery if required.



Car Sales

Many Speedwell customers decide that rather than convert their existing car it would be better to part-exchange for a new car already converted. A visit to the car sales showrooms at 763, Finchley Road, London, will often bring just the deal required with surprising speed. Speedwell car sales director **LEN ADAMS** is the first man to whom people speak when the problem is buying or selling converted cars. Having been at the hub of the converted car business since its very beginning, Len can place at your service unequalled experience and inside information. Len's car sales organisation can supply a great range of cars, new and secondhand, from normal family saloons to formula racing cars; sports cars, grand-touring cars, vintage and unusual cars included. Finance and insurance problems connected with converted cars and often thought to be insurmountable are solved daily! Len is also a racing driver of great experience having put up some remarkable performances in the Speedwell Austin A35s that put saloon-car racing on the map and later driven the Sprite-based Speedwell GT car with success both in Britain and on the Continent.



Service

It has always been a policy of Speedwell to back equipment sales with service. In fact, the possession of a well equipped workshop prepared to fit, set-up and maintain any special equipment has become the essential mark of a serious conversion firm.

The Speedwell Service Centre at Cornwall Avenue, Finchley, London, N.3 has the best equipped workshop for conversions and special equipment on BMC vehicles in the Country. Amongst its special facilities are an engine-building shop capable of the most advanced engine work, a machine shop capable of any kind of operation on cylinder heads, pistons, flywheels etc. and dynamometer tuning and testing equipment to measure the results with great accuracy. As well as fitting performance equipment, the Speedwell Centre will tackle anything from a simple service and grease to the complete transformation of a car in engine, suspension, bodywork, transmission, seating, instrumentation and accessories. Engines equipped with SU, Weber or Amal carburetors can be expertly tuned.

Service Manager **TIM CONROY** is always ready to advise on service problems. Tim is well known around the race circuits for his operation of 'Team Speedwell', an amateur racing team with some support from the company. Club-racing enthusiasts or motor sportsmen of any kind can be sure of a special welcome at the Speedwell Service Centre.



Engine Building

The assembly of high performance engines is an extremely exacting task demanding painstaking accuracy and meticulous cleanliness, the importance of which cannot be over emphasised. At the Speedwell Centre, a separate workshop is provided where this vital work can proceed under ideal conditions. Here, any engine requiring internal work receives the same standard of attention and workmanship as would a Grand Prix engine. It has been proved both by competition and long experience of engine conversions that highly skilled attention to the condition, preparation and assembly of every component is essential for power, smoothness and reliability. Anything skimped at this stage could have the most expensive consequences.

PETER LACINA, engine-shop foreman and one of Speedwell's 'old hands' has the craftsman's instinctive appreciation of the requirements of a 'happy' engine, hundreds of successful units taking shape under his skilled hands every year.

Whilst it may be true to say that nothing mechanical can be perfect, a Speedwell-built engine must come as near to it as is humanly possible.



Development

It has been said that "the art of conversion is producing tomorrow's motorcars today". It is not surprising that a successful conversion firm has to put a great deal of effort into development and research. In fact, Speedwell probably spends more, in relation to its size, on development than most motor manufacturers. To meet the needs of continuous engine development a unique engine test-house has been built in which engines can be tested under conditions which accurately simulate those in the car. The car's own exhaust system is used and an artificial slipstream is drawn through the test cell. This has made it possible, for the first time, to successfully use a dynamometer for the development of high-performance silencers. Power and torque are accurately measured by a remote-controlled electronic dynamometer whilst fuel-consumption, pressures and temperatures are recorded by comprehensive instrumentation.

An ingenious gas-flow apparatus is used to probe the mysteries of inlet port and cylinder head design, so vitally important for maximum performance.

In charge of this important aspect of Speedwell's work is Technical Director **DAVE JONES**. Well known for his informative articles that have appeared in the technical press, Dave is an engineer with an unusual background in instrumentation which enables him to bring the most modern methods to bear upon engine-tuning problems. Whilst most of his time is divided between the drawing-board and the controls of the test-house, Dave is always available to discuss customers' engine conversion problems of the more complex kind.



Development is of course not confined to engines alone and it is in the sphere of suspension improvements that **GRAHAM HILL** makes an invaluable contribution. Graham's extraordinary perception of the faults and possible remedies in a car's roadholding has resulted in a range of suspension equipment bringing added safety and pleasure within the reach of all keen motorists.



Our customers write

- 1957 **E. M. Jackson, Ashmanstead, Berks** (SUSPENSION EQUIPMENT)
The effect of the device on the Wolseley 1500 is magnificent and the car now handles like a Morris Minor. I am very pleased with it.
- 1958 **P. D. Shanks, Finham, Coventry** (SUSPENSION EQUIPMENT)
The anti-roll bar has been received and fitted and I must say that the road holding is improved beyond all expectations and the A.35 is being hurled through corners miles per hour faster than my passengers believe.
- 1959 **Oliver Holliday, Dawson Hill, Morley** (ENGINE CONVERSIONS)
Thank you very much for doing such an excellent job in tuning my car. I am most impressed by it—as must have been the couple in the Bentley which must have been clocking 95 when I passed it at F (on the fuel gauge).
- 1960 **W. Friedrich, West Germany** (ENGINE CONVERSIONS)
Ich moechte mich noch nachtraeglich fuer Ihr sehr grosses Entgegenkommen bedanken und Ihnen mitteilen dass ich mit der Verbesserung des Motor und Fahrwerk sehr zufrieden bin.
- 1961 **J. Stanton, Hampstead, N.W.3.** (RACING MODIFICATIONS)
Thank you all at Speedwell for the fastest Mini racing, with lap records to prove it.
- 1962 **E. R. Robertson, North Shields** (SUSPENSION EQUIPMENT)
I feel that the various motor publications have not done justice to this Camber Compensator. The following are a few improvements:—
(1) Nearly complete elimination of oversteering on bends and roundabouts.
(2) Very considerable improvement in handling generally.
(3) Elimination of steering wandering with side wind which was most marked before fitting same.
- 1962 **M. J. Tucker, Co. Durham** (EXHAUST SYSTEM)
You will be pleased to know that the silencer is performing very well.
- 1962 **Dave Clark, New Jersey, U.S.A.** (INSTRUMENTS)
I have already ruined the temperature gauge that came with the car, and this brings me directly to the point. I want to replace my water temperature and oil pressure gauges with those high quality Speedwell gauges. By the way, the oil temperature gauge works beautifully and is very reassuring.
- 1962 **Peutte-Colau, Abbeville, France** (INSTRUMENTS)
I have received in good condition the electronic rev counter and after fitting it in on my Mini-Cooper I can say that it is running well.
- 1962 **J. Malcolm Wilson, Metropolitan Police Motor Club** (SUSPENSION EQUIPMENT)
I would not have thought that such a simple piece of equipment could have made such a difference to the handling of the car. The road holding of my VW was the talk of the rally. I became quite used to such remarks as "been around any good corners lately?" I am not easily convinced where modifications to the VW are concerned but I have been won over this time.
- 1962 **A. J. Levell, Buckinghamshire** (ENGINE CONVERSIONS)
The car has been entered in many club rallies with great success and I am therefore proud of the performance gained, and would like others to benefit from Speedwell Conversions.
- 1962 **R. Nillerton, Yorkshire** (ENGINE CONVERSIONS)
May I say how delighted I am with your G.T. kit which my local garage fitted this last week. The increase in performance is very good indeed.

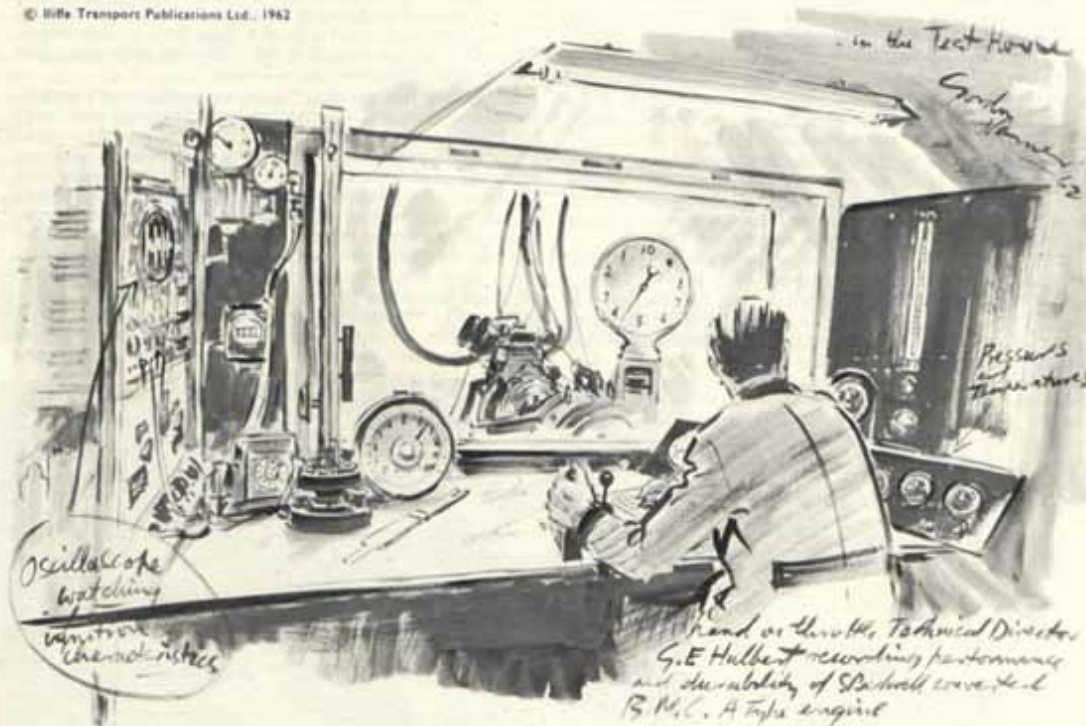
SPEEDWELL PERFORMANCE CONVERSIONS LTD., London, England

● **12 Months Guarantee** ●

THAT SOMETHING EXTRA • No. 3

SPEEDWELL In this series of articles Peter Garnier talks to the men behind the performance conversion business

© Hiffe Transport Publications Ltd., 1962



IT wasn't altogether surprising, I suppose, that the local Espresso bar—traditional starting-off point of so many other "ton-up" ventures—should have seen the initiation of Speedwell Performance Conversions.

John Sprinzel had been racing and rallying a tuned Austin A.35 with a certain amount of success when his old friend George Hulbert, an *habitué*, like John, of the Espresso—offered to do some work on the cylinder head. The outcome of his efforts was that John won the first race he entered with the new head, at Goodwood on Whit Monday, 1957. A television interview with John Bolsjer followed as, subsequently, did a heap of letters from similarly inclined owners of cars fitted with B.M.C. A-series engines.

So, over lunch at the Espresso bar, John and George discussed the possibility of satisfying this nucleus of potential customers, and perhaps making it a business. It so happened that another regular luncher at the bar was Len Adams,

His B.A.R.C. badge, together with the stick-on registration numbers and absence of nameplates on John's A.35, suggested a certain common-ness of interest between the parties involved. Len was drawn into the scheme and tentative plans were laid down. Reg Venner, a gifted West Indian who to this day is working with John Sprinzel, was taken on to do the physical work of preparing the cars. Graham Hill, who had been taking up motor racing the hard way as a mechanic with Lotus Engineering, joined as workshop foreman ("So I could make both ends meet, and marry Bette")—Speedwell little knowing that they had taken on an eventual leader in the Drivers' World Championship—and, on 26 June, 1957, Speedwell Performance Conversions came into being. The name Speedwell, appropriately enough, is that of the Golders Green telephone exchange.

At first, the somewhat cramped premises consisted of a showroom and John's flat, No. 7 Accommodation Road,

Golders Green. Secretary was Ann Wisdom, later to win the Women's European Rally Championship with Pat Moss on three occasions, and to become Mrs. Peter Riley; her "office" was John's kitchen. Three months later Accommodation Road began to burst at the seams, and they took over No. 763d Llanvanor Road, also near Golders Green. Stage by stage they enlarged their premises, working backwards down the alphabet to 763a, and eventually to No. 763, a most desirable corner property with a frontage on Finchley Road itself. Graham Hill and Reg Venner worked on the cars; George Hulbert did the development work; Len Adams looked after the sales and the customers; and John Sprinzel handled the office side and saw to it that the efforts of his colleagues received adequate publicity.

Salesman Arnstein

During the following year they were joined by Lutz Arnstein, whose forte was selling things. He had been working for some years in Sweden, subsequently coming to this country and joining Delaney Gallay, for whom he sold RKN seat belts. To boost the sales of these he persuaded Speedwell to lay on demonstrations at the Hendon Road Safety displays using Miss Rita Royce as a model—which shows the business acumen possessed by Lutz. Eventually he left Delaney Gallay to set up his own export business and, through his previous connection with Speedwell, started selling their performance equipment in fair quantities abroad. In fact, as he says, they probably sold more abroad in those early days than they did in this country.

While I was calling this information from Graham Hill and Lutz Arnstein in their modern office at No. 763 (or maybe 763a) a large crowd of small boys had collected at the door, plucking up courage to ask for World Champion-presumptive's signature. Graham got up and signed their books. "Sorry," he said, "but I've got an interview with *The Field* in half an hour. I must go and put on my jodhpurs and saddle my horse"—leaving me with Lutz. It was a very far cry from the days as Lotus mechanic. One couldn't help thinking of the present-day Graham; known—

and signing his autograph—in racing circles all over the world, helping to raise B.R.M. from almost nothing to their present leadership in the Grand Prix Constructors' Championship, fighting a real needle-match with Jimmy Clark for the Drivers' World Championship, and basically entirely unaffected by one of the greatest success stories in racing.

With Graham's diverting influence gone ("If you want to see the accounts, we don't keep any") Lutz got down to serious matters. "With what amounts to a world-wide business, people overlook the fact that a tremendous amount of packing and mailing is involved, so that the whole thing has got to be set up on a proper business footing. Everything we produce is properly designed and an engineering job. There are two ways of selling your wares. One is to have officially appointed area distributors; the other, which we favour, is to give our various stockists the best possible terms and the opportunity of getting a return proportionate to the amount of effort they put into the job of selling Speedwell equipment. If they work hard they can win their area to themselves. Thus, the stockists look after the individual enthusiasts, and Speedwell itself looks after the Trade."

In reply to the question "Does a manufacturer's guarantee become invalid if your equipment is fitted to a new car?" Lutz had this to say: "You can't—nobody could—expect a big organization like B.M.C. to let owners carry out whatever modifications they like, and still honour their guarantee. If something fails on a B.M.C. car we've worked on, and you take it to B.M.C., they'll send you back to us. If we tell them that it is a reasonable and legitimate claim, and one that does not result from the fitting of our equipment, there has never been any difficulty in getting B.M.C. to accept the claim. In addition, we guarantee our equipment for 12 months. Racing or rallying, of course, invalidates a claim. That is why we limit our sales to the public to "production tuning" equipment and work that will improve the performance, but not jeopardize reliability.

Speedwell also carry out advanced tuning for competition work, but this isn't the sort of thing they let out to the general public. However, as Lutz said, it is difficult to make both ends meet financially on tuning alone—which is why they produce speed equipment and special accessories. Included in these bread-and-butter lines are such things as interior door handles for B.M.C. Minis, to replace the wire pulls; of these over 15,000 have been sold so far. Then there is the Speedwell electronic rev-counter, the only one of its type to be accepted by the British aircraft industry for use on light aircraft. There are the glass fibre bonnets for Austin-Healey Sprites, of which batches of three are sent by air to New York for £11; these, the hard-top for the Mark II Sprite and M.G. Midget, and in fact all the glass fibre bodywork conversions sold by Speedwell, are produced by Williams and Pritchard. Mini sump guards... Saab silencers... aluminium heads for the B.M.C. A-series engine... steering wheels with wooden rims... Volkswagen camber compensators for the rear springs... anti-roll bars for the Riley One-Point-Five and Wolseley 1500... all these and more make the money and help to pay for the more costly tuning side of the business.

Three people are occupied full-time keeping track of changes in parts on B.M.C. and other products, keeping

pace with the need for development of new equipment. So far as active racing is concerned, Graham Hill and Len Adams raced A.35s and Sprites in British and European events in 1958, 1959 and 1960, Graham winning his class at Rouen in 1960, and Len at Clermont Ferrand. In 1958 Graham, Len and John Sprinzel formed the team of Austin A.35s that won the Silverstone Six-Hour Relay race.

Currently they have a few Team Speedwell teams racing—one run by Ken Lee, stockist in Yorkshire, another by Tim Conroy, who looks after Team Speedwell Harrow, and so on—the pattern now being to let customers buy their own cars and subsequently to give them a certain amount of support and assistance.

As has been the case earlier on at Accommodation Road, the seams at Llanvanor Road, too, began to stretch—so once again Speedwell began shopping for new premises, eventually finding them at Cornwall Avenue, London, N.3. It is here that the engine tuning and preparation goes on, with George Hulbert as technical director and David Jones as development engineer; Peter Lacina, who used to work on army tanks in Warsaw, has been with Speedwell for four years and is now entirely responsible for the actual assembly of their fully modified engines.

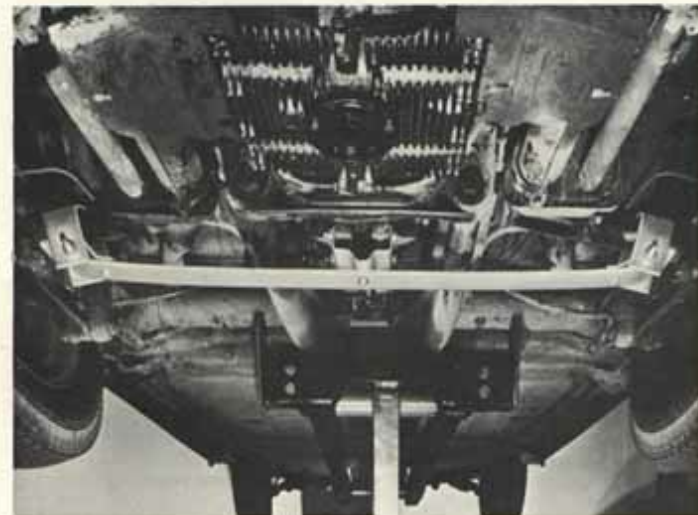
Modern Test House

Housed in a modern test shop, the intriguing sound insulation of which is a story in itself, there is a Heenan and Froude dynamometer; and among the machine tools there is a pantograph milling machine, on which I saw a five-port head for the B.M.C. A-series engine being produced, scaled down from a large wooden pattern. One of the main assets at Cornwall Avenue, however, is space; it is intended to move the Llanvanor Road stores and offices to the same place.

Speedwell have "arrived"—not without assistance from the world of competition which they serve. John Sprinzel left them in 1959 to set up his own business in Lancaster Mews; Lutz Arnstein is the guiding hand, and Graham Hill is still there, though much of his time is taken up, obviously, by his racing commitments. He is still of tremendous value to the set-up in his ability to diagnose and solve suspension problems. Amongst his achievements has been the sorting-out of the B.R.M. suspension and the development of a transverse rear stabilizer for B.M.C. Minis which, as he says, has now found respectability as a standard fitting on the new 1100 c.c. ADO16s.

Reprinted from *Autocar* 27 July 1962

LIMITING SWING



This photograph shows the Speedwell camber compensator as fitted to a Volkswagen; it is easy to fit or remove, and suitable brackets are available for all VW models

SUSPENSION MODIFICATION BY SPEEDWELL

SWING axles are employed on the great majority of the cars whose back wheels are independently suspended. Although adequate and moderately cheap, this layout has certain disadvantages. One in particular is the con-

siderable change in camber, which results in a jacking effect produced on the car due to the differences in cornering forces on the inner and outer tyres. In 1959 both Porsche and Mercedes introduced a compensating spring on their swing axle

layout in an attempt to equalize the loads between inner and outer tyres. This is achieved with the compensating spring by reducing roll stiffness. An incidental result is that the front tyres take a higher proportion of the cornering loads, with a net result that there is, in theory, a reduction of oversteer effect inherent with almost any swing axle design.

Speedwell, well known for their performance modifications on engines and chassis, have followed the Porsche layout of a single transverse leaf spring mounted beneath the gear box and to the two swing axles. Volkswagen, Renault and Standard-Triumph are the largest (in numbers) users of simple swing axle layouts, and Speedwell have designed suitable compensator springs for all these models. Fitting in the case of Dauphines and VWs takes only a few moments, and with a Herald a little longer. Cost of the device is £7.

Road Impressions

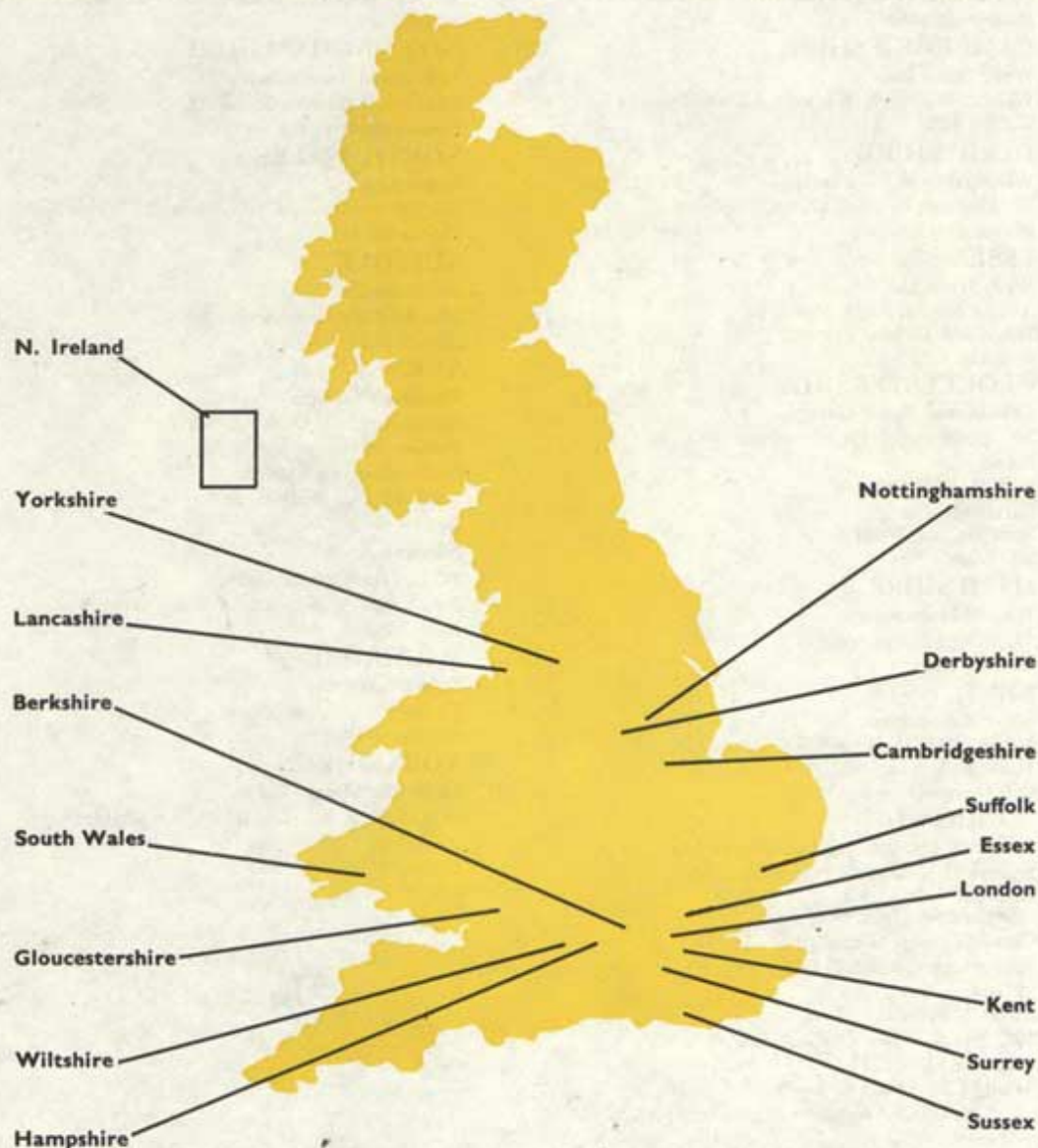
Last week a chance was taken to drive a Herald and Volkswagen fitted with a compensating spring. Although the experience was of too short a duration and the public roads too crowded for real limit testing in order to evaluate the device's full worth, some definite improvements in handling were evident. With the Volkswagen rather than the Herald it was particularly noticeable that the back could be slid round smoothly, without the tail of the car jacking itself up as the two rear wheels fold under on their swing axles. It is also observable that at moderate speeds the handling has become much more orthodox; when driven hard the oversteer can still be felt although the changeover point is greatly delayed. Enthusiastic drivers who have become conversant with the Volkswagen oversteer might not find this compensating spring a benefit. For the more sedate motorist this new accessory might well provide an added touch of safety.



SPEEDWELL STOCKISTS IN THE UNITED KINGDOM

SPEEDWELL

DISTRIBUTION



SPEEDWELL EQUIPMENT CAN BE ORDERED AT ALL HALFORDS BRANCHES

● 12 Months Guarantee ●

P.T.O. ▶

SPEEDWELL STOCKISTS

BERKSHIRE

Brazier Motors, Ltd.,
117, Bridge Road, Maidenhead, Berkshire
Maidenhead 22953

CAMBRIDGESHIRE

Wood Bros., Ltd.,
Walton Highway, Wisbech, Cambridgeshire
Wisbech 1920

DERBYSHIRE

Willoughbys of Ilkeston Ltd.,
Nottingham Road, Ilkeston, Derbyshire
Ilkeston 5101

ESSEX

W. J. Wells Ltd.
Austin House, High Road,
Woodford Green, Essex
Buckhurst 0013

GLOUCESTERSHIRE

Colesbourne Motor Garage,
Nr. Cheltenham, Gloucestershire
Coberley 234
S. & R. Wild Ltd.,
Parklands Garage, Park Street,
Stow on the Wold
S.o.t.W. 337

HAMPSHIRE

Wessex Motors, Ltd.,
49, Bridge Street, Andover,
Andover 2326

KENT

Super Accessories,
367, Lewisham High Street,
London, S.E.13
LEE Green 4691

LONDON

Speedwell Performance Conversions Ltd.,
Speedwell Centre, Cornwall Avenue,
London, N.3
FINchley 7866
Cornwall Lodge Garage,
109, Anerley Road, S.E.20
SYDenham 5904
Allery & Bernard,
372, Kings Road, Chelsea, S.W.3
FLAxman 5808
Trinity Cars Ltd.,
94, North Side, Wandsworth Common, S.W.18
VANdyke 1166

LANCASHIRE

Sports Motors, (Manchester) Ltd.,
126, Rusholme Road, All Saints,
Manchester 13
Ardwick 3015

● 12 Months Guarantee ●

N. IRELAND

Paddy Hopkirk,
12, Alfred Street, Belfast 2, N. Ireland
Belfast 27616

NOTTINGHAMSHIRE

Lido Speed Accessories,
92a, North Sherwood Street, Nottingham
Nottingham 42983

SOUTH WALES

Evans Motors,
4/9 Priory Street, Carmarthen, S. Wales
Carmarthen 6622

SUFFOLK

Botwoods Ltd.,
Majors Corner, Ipswich
Ipswich 52271

SURREY

Pippbrook Garage,
London Road, Dorking, Surrey
Dorking 3891
Nutfield Service Station,
Nutfield, Nr. Redhill, Surrey
Nutfield Ridge 2285

SUSSEX

W. G. Heathcote & Co.,
2-8, Kings Mews, 3rd. Avenue, Hove
Hove 39750

WILTSHIRE

Palace Garages,
Endless Street, Salisbury
Salisbury 5135

YORKSHIRE

Lightcliffe Motors Ltd.,
Wakefield Road, Lightcliffe, Nr. Halifax,
Yorkshire
Halifax 69191

Speedwell Performance Conversions Ltd., London, England

occasions, however, a plug was "lost". The first was after a really hectic traffic jam, and the other was due to inadvertently over-filling the sump when topping up with 'R'.

Pleasantly surprising, was the subdued exhaust note when the car was being driven normally; it is only when the needle is pushed beyond the 4,000 rpm mark that something of a bark accompanies the sweet-smelling exhaust cloud from the tail pipe. Even though the test included a lot of high-speed driving, the oil consumption worked out at close on 200 miles to the pint.

At very low speeds, the separate firing impulses could be detected, but once under way the engine gave no hint that it was running on such a high compression—the value of a light alloy head. There was a rough patch from about 3,200 to 4,000 rpm, which was transmitted through the gear lever in the form of a violent rattle, and this was probably due to the fact that the engine had had to be stripped and rebuilt very quickly between events, and there had been no time in which to regain the former balance.

Beyond this mark the unit was much smoother, right up to peak revs. Quite a careful watch has to be kept on the needle at the top end, because the punch between 4,000 and 7,000 rpm is surprisingly good. Fortunately, there is a considerable build-up in mechanical noise beyond 7,000 rpm, and this is a useful warning that it is time to change up! Speedwell recommend that 7,500 rpm should be used only momentarily, and although the engine still sounds in good shape then, I found that there was no real point in pushing the needle beyond 7,200 rpm. Using this limit, the top speeds in first, second and third gears are 36, 60 and 84 mph, which seems useful enough by any standards!

A reasonably long stretch of clear road will allow 6,500 rpm to be seen in top gear, and this corresponds to just under 104 mph, while with the aid of a slightly favourable grade I saw 6,600 rpm which is no less than 109 mph. I might add that the road surface was not completely dry for this, or for the acceleration runs, and in perfect conditions a slight improvement would have been likely. The comfortable engine speed for sustained cruising seemed to be about 6,000 rpm, or just a little more, which is not so very far short of 100 mph. (Top gear speed at 1,000 rpm is 15.9 mph). Naturally, more than usual care must be taken with the Mini when using very high speeds, in view of the ten-inch diameter wheels, and the tyres (Dunlop C41s with tubes were fitted for the test) should never be run below 40 psi for fast motoring.

Being a dual-purpose car, the suspension settings had not been changed, and undoubtedly track performance would have been enhanced by lowering the suspension the full amount. But this would have resulted in an uncomfortable road car, so Ken Lee's compromise is probably the best one in the circumstances. With an inherently understeering car, an increase in engine power can only serve to exaggerate the understeer. The rear anti-roll bar has helped somewhat to keep this within reasonable limits, but I noticed, particularly on a wet track, that the right foot has to be played very delicately on sharp bends if the car is to be kept on line. When it is really slippery it is possible to put on lock, then travel in a zig-zag simply by playing with the throttle!

On public roads, and driving in a rather more restrained fashion, the car handles very well indeed, and it is a delight for a really fast cross-country journey through twisty minor lanes. The technique for this seems to be to let engine power build up the understeer slightly, then steer accordingly, so that if you have to lift off the car will automatically tighten its line. On right-hand bends, this can be countered by taking off lock, while on left-handers, it automatically pulls you close in to the side. The disc and drum brakes were well able to cope with the car's speed, and the only complaint on this score was that the discs persisted in squealing, especially when they had become hot. Not a very comforting feature for pedestrians close by!

Apart from the gear lever rattle, the gear-box was in fine form after its season's hard work, while the clutch still had a light action, and a quick release, which even enabled bottom gear to be selected cleanly when moving slowly.

This is a remarkable little motor car, and as a fun machine it must have few peers at the price. Ken Lee has proved that, as long as you are happy to concentrate on the smaller type of event, your commuting transport can also be a competition class winner a workhorse one day, a plaything the next, and the source of a lot of enjoyment all the time. Vive Group 3!

JOHN BLUNSDEN

ACCELERATION PERFORMANCE

0-30 m.p.h.	3.2 seconds	0-60 m.p.h.	8.8 seconds
0-40 "	4.6 "	0-70 "	11.6 "
0-50 "	6.4 "	0-80 "	15.6 "

● **12 Months Guarantee** ●

Speedwell Performance Conversions Ltd., London, England

Road tested by John Blunsden and reprinted from "Sports Car", December 1962.



Mini with the lot—even including radio! This fully equipped Speedwell version retains the normal Cooper Mini suspension, apart from different dampers and an anti-roll bar at the rear. But an 82 horsepower engine makes it enormous fun on the track. (John Blunsden testing at Brands Hatch).

A 109 mph SPEEDWELL MINI

SUCCESSFUL SPRINT CAR IS ALSO AN ENJOYABLE ROAD MACHINE

In Britain, enthusiasts have long since stopped marvelling at the performance which can be obtained from a Cooper Mini. Today, it is taken almost as a matter of course that the best tuned examples will be tagging on behind the 3.8 Jaguars, and on the tightest circuits, even mixing it with them. In rallies they are just as successful—perhaps even more so—and in Sweden they seem to be gaining a following as enthusiastic as that for SAAB, which suggests that they are well able to cope with the rough stuff, when they are suitably prepared for it.

But most of the important sporting events, both at home and abroad, are for Group 2 cars, and consequently there are important restrictions on what can be done to extract more power. It is usually in minor events, such as club races and sprints, that Group 3 cars can be used, and as the majority of Miniracers like to have an occasional crack at a more important event, the number of fully tuned Group 3 cars around is comparatively limited.

This is a pity, because a competent tuning specialist, given a free hand, can transform a Cooper Mini into a really potent 'bomb', as I found out recently when I borrowed a car from Speedwell. This

● **12 Months Guarantee** ●



Internal changes to Ken Lee's Speedwell 'mini-bomb' include a competition seat, electronic rev counter, combined water temperature and oil pressure gauge, separate oil temperature gauge and (hidden to the right of the radio) an air slide for the Amal carburettors.

was not a specially prepared test car, but one owned by a customer, which had been back at the works for an end-of-season check-over and service, after six months of sprint-type competition in the North.

The body sides carried the motifs 'Team Speedwell Yorkshire', and apart from the 'Speedwell' badge on the back, the extra safety clip on the engine cover, a sticker on the rear window, and the lack of wheel covers, this looked just like any other green and white production Cooper Mini. Inside the deception was carried further, for the car was fully trimmed and carpeted, and it even had a heater and radio! The small hint of something out of the ordinary came simply from a rev counter, a combined oil pressure and water temperature gauge, and an oil temperature gauge. There was also a matching competition-type seat, a combined diagonal and lap strap, and tucked away beneath the fascia on the right side was an air slide for the Amal carburettors, replacing the normal pull-type choke.

The car is owned by Ken Lee, who has been having a very successful 1962 season, mainly at BARC events. His score sheet includes six 'firsts', including four new sprint records, and apparently this car has been the cause of some spirited rivalry between Cooper Mini owners in the area!

The Lee car has been progressively 'breathed on' throughout the year, to stave off ever-growing competition, and when I tested it it had 'the lot'. Yet remarkably, it was still a most usable road car, which indeed is its major function, the car having covered some 11,000 miles already.

The engine modifications include boring out the block, and fitting 67 mm pistons (made in Germany) to increase the capacity to 1,152 cc. The normal cylinder head has been discarded and replaced by a Speedwell Clubman-type light-alloy head, plus a special camshaft and valve gear. The engine runs on a compression ratio of 11.5 to 1, and as mentioned earlier, the fuel is fed through a pair of Amal carburettors.

There is a special flywheel, having only 50 per cent of the moment of inertia of the standard components, and the con rods are hand picked, machined at vital points, and crack tested. The bottom end has been 'beefed up' by strengthening the main bearing caps—this has been achieved by machining off the caps, and surrounding them with steel straps which are bolted down with longer

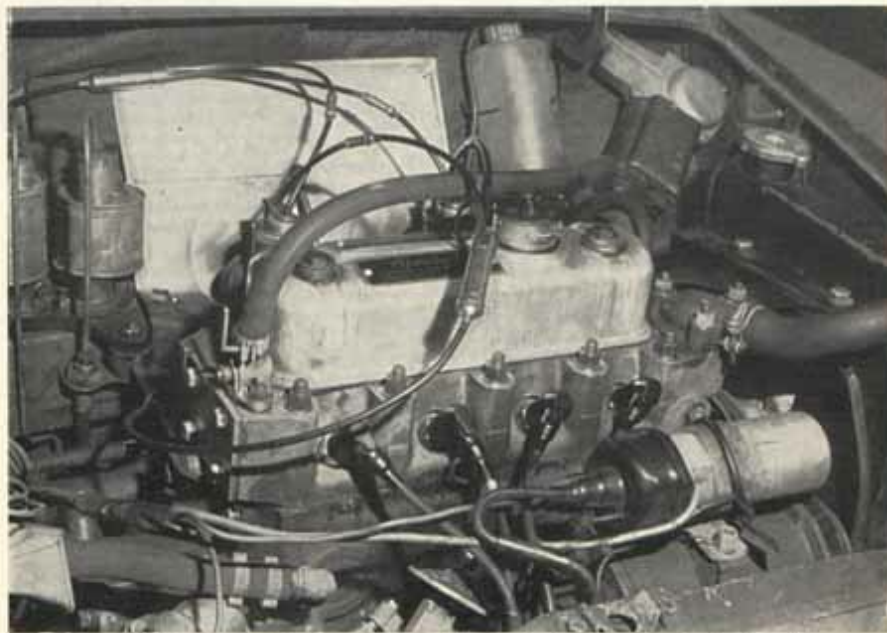
bolts. A lot of time is spent on profiling and finishing off the cylinder head, and the result is a unit which can be revved for shorts bursts up to 7,500 rpm, and which delivers 82 horsepower at 6,600 rpm, and 71 pounds feet of torque at 5,000 rpm.

The full conversion also includes lightening and balancing of all rotating parts, a special oil pump and an oil cooler. The suspension is basically unchanged, although a rear anti-roll bar and adjustable telescopic shock absorbers are fitted. The supplementary instruments mentioned above are also included in the conversion, which is marketed at £240. Alternatively, Speedwell offer a road-going version of the same conversion, costing £195. The main differences are that on the road-tuned car there is a lightened production flywheel, giving a 23 per cent reduction in moment of inertia, and the work on the bearing caps, hand selection and machining of rods, and final finishing of the cylinder head is not taken quite so far.

Ken Lee's Cooper Mini is run on Castrol 'R', and as regular competitors will know, this calls for a carefully controlled starting procedure. The Amal air slide is fully closed, the starter operated, and the throttle opened up very slowly. As soon as the engine fires, the lever is moved to the half-way position, and the engine is allowed to warm up at 2,000 rpm. The racing oil being thick, the oil pressure takes some time to build up, but as soon as it reaches about 40 psi the engine can be opened up. About a mile of running is necessary from cold before the air lever can be opened completely, and from then on it will not be needed for the rest of the day, unless the engine is restarted after several hours in around zero temperature.

The big advantage of boring out, of course, is that it gives the opportunity for a lot of extra performance to be obtained without making the car unpleasantly intractable. In this case, although peak torque is not obtained until 5,000 rpm, the pulling power necessary for normal road use is available as low as 2,000 rpm, or even lower, so that the car can be driven in heavy traffic just like the standard production car, with the possible exception of a higher tick-over speed.

Not surprisingly, prolonged low-speed running results in some fluffiness when opening up again for the first time, but usually this soon clears and the engine regains its usual crisp note. On two



Speedwell's 1,152 cc Group 3 'Clubman' engine has a light alloy head, and twin Amal carburettors. It is lubricated with Castrol R.

SPEEDWELL CLUBMAN KIT

ROAD TEST REPORT

Reprinted from MOTOR February 1963

Speedwell modifications greatly improve B.M.C.'s latest small car

If you own a Morris 1100 it is almost essential to have it breathed on if you want to keep your dignity, performance-wise, amongst the myriads of hot Minis. Speedwell Performance Conversions Ltd., recently loaned us an 1100 tuned so that only the more radical Minis could say "Boo" to it. Moreover, this was achieved without spoiling the car's natural appeal.

Depressed by the inbuilt restrictions of the standard "A" Series cylinder head that is found on all the small B.M.C. cars, Speedwell have designed their own special head in light alloy: this is the basis of their 1100 GT Kit. The head has only five ports, like the B.M.C. cast iron one, although a seven-port racing version is also available. There is no exchange system which means that when the car is sold it can be converted back to standard and the conversion either retained or sold separately.

The kit includes a new Supertone exhaust system, and twin S.U. carburetters, either of 1½ in., or as we had, 1¼ in. The bigger ones cost £15 extra. Not included in the kit itself, but fitted to our test car, were adjustable-rake Restall seats, a Speedwell electronic rev. counter, and Interior Silent Travel.

Needless to say the car was a "goer" yet the pleasing 1100 characteristics of torque and quietness had not been lost. It was one of those cars that did not "feel" converted but went as though it was. Unfortunately the weather did not allow us to obtain meaningful standing start acceleration figures, so we cannot confirm Speedwell's 0-50 m.p.h. claim of approximately 10 secs. Before the snow set in however, we were able to exceed their best claimed maximum speed by two miles an hour (at 95 m.p.h.). With a tuned car one might well expect the 50-70 m.p.h. figure in top gear to be reduced from 26.7 sec. to a rousing 17.1 sec. but the improved 10-30 m.p.h. figure in the same ratio is a measure of how

little the car's original virtues have been destroyed. It naturally follows that high r.p.m. was not necessary to extract full performance from the car—an important point, since this particular version of the "A" series engine does not take kindly to excessive revs. Speedwell's suggested limit of 6,500 r.p.m. left the engine still sounding happy and there did not feel to be any material advantage in going beyond this figure. Fuel consumption is often where the real expense of modifying a car lies, but on this particular conversion (at least at steady speeds) higher velocities actually recorded better figures than the standard car.

Initially the engine "ran on" after switching off but a different set of spark plugs completely cured this trouble. The car took quite a few turns on the starter before the engine would run after a cold night in the open but one of the virtues claimed for the alloy head, is quicker warming up.

Snow-covered roads are not ideal for testing the effects of increased performance on braking and roadholding. However, driving the 1100 on snow did show that although its front-wheel drive makes it sensitive to "power on" and "power off", traction is excellent on the most slippery roads. Moreover, it will plough through bigger snowdrifts than the Mini, having bigger wheels.

All this coupled with an excellent heater made motoring fun, even in foul weather.



The test car which was on the stand at the Racing Car Show. An Interior Silent Travel kit is available at £7 10s. Warning: If you see this car on the road, don't bother trying to overtake, it belongs to Graham Hill.

Performance Data

Test Conditions	"The Motor" Road Test No. 3242	Speedwell Morris 1100
	Temperature 50-64°F. Barometer 29.7 in. Hg. Dry with 10 m.p.h. wind	Temperature 49-47°F. Barometer 29.35-29.25 in. Hg. Damp with 10-20 m.p.h. wind
Maximum Speed		
Mean lap of banked track	78.2 m.p.h.	88.2 m.p.h.
Best 1-mile on straight	81.4 m.p.h.	89.0 m.p.h.
Maximile Speed (timed 1/4 mile after 1 mile accelerating from rest)		
Mean of opposite runs	75.2 m.p.h.	84.9 m.p.h.
Best one way time	77.6 m.p.h.	87.4 m.p.h.
Top Gear Acceleration		
10-20 m.p.h.	12.4 sec.	12.1 sec.
20-40 m.p.h.	12.1 sec.	12.0 sec.
30-50 m.p.h.	13.0 sec.	12.5 sec.
40-60 m.p.h.	15.8 sec.	13.9 sec.
50-70 m.p.h.	26.7 sec.	17.1 sec.
60-80 m.p.h.	—	37.1 sec.
2nd Gear Acceleration		
10-20 m.p.h.	8.4 sec.	7.6 sec.
20-40 m.p.h.	7.9 sec.	7.4 sec.
30-50 m.p.h.	9.0 sec.	7.8 sec.
40-60 m.p.h.	13.1 sec.	9.9 sec.
50-70 m.p.h.	—	13.5 sec.
Fuel Consumption		
At steady 30 m.p.h.	51.0 m.p.g.	50.5 m.p.g.
At steady 40 m.p.h.	47.5 m.p.g.	48.0 m.p.g.
At steady 50 m.p.h.	41.5 m.p.g.	42.0 m.p.g.
At steady 60 m.p.h.	36.0 m.p.g.	36.0 m.p.g.
At steady 70 m.p.h.	30.6 m.p.g.	32.0 m.p.g.
At steady 80 m.p.h.	—	27.5 m.p.g.
Overall consumption	35.1 m.p.g. for 3,200 miles	27.1 m.p.g. for 348 miles

Prices: G.T. kit £15. Extra: 1¼ in. carburetters, £15. Speedwell rev. counter, £17 10s. Interior Silent Travel kit, £7 10s. Restall seats, £10-£25.

Reprinted from PRACTICAL MOTORIST May 1963

Speedwell Tuned 1100

WITH above-average road-holding, light and direct steering, and disc brakes on the front the Morris 1100 is a "sitter" for tuning.

In standard form its 48 b.h.p. engine gives a fairly respectable performance, with a 0-60 m.p.h. time of 21.6 seconds, and a top speed of approximately 78 m.p.h. But bump the b.h.p. up to 68 at 6,000 r.p.m. and see what happens. On the Speedwell-tuned 1100 we tried, the 0-60 m.p.h. time improved to less than 16 seconds, while top speed was pushed up to 93 m.p.h.

Because the Morris suspension, brakes and steering can take it, the only tuning required was on the engine from the cylinder head gasket upwards. Speedwell Performance Conversions Ltd., call the bits and pieces required to produce these figures their Clubman Kit. Basically, it consists of a five-port alloy cylinder head giving a compression ratio of 9.5:1—for super petrol grades—and two 1¼ in. S.U. carburetters.

To take advantage of the larger volume of fuel/air mixture available bigger inlet valves are fitted to the head, together with stiffer valve springs which allows the engine to rev in excess of 6,500 r.p.m. To go beyond this is inadvisable without further internal work—especially on the gudgeon pins, which have been known to fracture at high engine speeds.*

On the exhaust side the standard manifold is used, although a straight through Supertone silencer with twin tail pipes is fitted to reduce back-pressure. The price of the complete kit works out at £90, plus an £8 fitting charge if you don't want to do the job yourself.

Other extras fitted to the test car included a pair of extremely comfortable Restall fully-reclining front seats, Interior Silent Travel soundproofing, an electronic tachometer and an oil temperature gauge. Of these, the electronic tachometer is a "must" if full advantage is to be taken of the extra revs. and Speedwell market a suitable instrument for £17 10s.

One of the first surprises on driving the car is its outstanding tractability at low engine revolutions. The alloy head gives a quick warm-up, and once operating temperature has been reached there is a remarkable amount of punch available in top gear right down to 30 m.p.h.

Because of the good handling characteristics of the 1100, it is in fact possible to take practically any corner in third gear without experiencing the normal pick-up pause which most small engines have at low revs. Purely out of academic interest, it was found that the test car would pick-up cleanly and without snatch from 20 m.p.h. in top and 15 m.p.h. in third gear.

With this amount of push (or pull) low down, the 1100 avoided the characteristic which often goes with a tuned engine—the sudden surge of power as the revs. build up. On the Speedwell Morris a controlled rate of acceleration was maintained throughout the rev-range—a feature attributable no doubt to the considerably-modified combustion chamber shape and increased valve area.

Handling was little affected by the increased power. Naturally, with more urge available at the front wheels, taking the power off on a corner caused a considerable change from understeer to oversteer. This was probably accentuated by the relatively hard anti-roll bar fitted (by B.M.C.) at the rear. On later versions a lighter anti-roll bar was used, and with this the change should not be so pronounced. Regardless of the harder anti-roll bar, the test car was by no means awkward on corners at higher speeds—providing the power was kept on.

Slippery surfaces prevented us from completing our normal number of two-way standing start acceleration runs from which to obtain an average set of figures. The data available indicates a 0-30 m.p.h. time of 4.5 seconds, 0-40 m.p.h., 7.0 sec.; 0-50 m.p.h., 11.0 sec.; 0-60 m.p.h., 15.5 sec.; 0-70 m.p.h., 22.5 sec., but we would stress that these performance figures are approximate only.

Fuel consumption, bearing in mind the twin 1¼ in. S.U.'s, was reasonable. Overall, it came out at 23.5 m.p.g., although driven lower down in the rev-range this could no doubt be improved to 30 m.p.g.-plus.

Summing up, the Speedwell-treated 1100 was a lively and enjoyable vehicle to drive. The car we tested belonged to Mrs. Graham Hill. What better recommendation is there than that?

*NOTE (Factory modification now incorporated) S.P.C. Ltd.



The twin 1¼ in. S.U.'s, light alloy cylinder head and Supertone exhaust system have produced 72 b.h.p. at 6,000 r.p.m. on a compression ratio of 9.5:1. With 1¼ in. S.U.'s fitted, 67 b.h.p. is produced at 5,000 r.p.m. In spite of the absence of air cleaners, there was a creditable absence of roar during acceleration.

It was difficult to assess the value of a rear anti-roll bar since the C41 tyres were at over 40 p.s.i. for 100 m.p.h. motor-ing and themselves made the steering extremely sensitive. Other extras included a useful headlamp flasher (18s. 6d.) wooden dash (£3 7s. 6d.) to accommodate an electronic rev counter (£17 10s. and almost essential with such a high revving engine) and oil and temperature gauges (£5 10s.). There was also a brake servo (£13 10s.) which we feel could not have been functioning properly since the brakes were considerably poorer than those of a standard Mini-Cooper staff car, a delightful wood-rimmed steering wheel (£11 19s. 6d.), oil cooler (£13 10s.) and Kenlowe fan (£12 10s.). The 3-44 final drive ratio costs £5 and an exhaust manifold (not included in the price of the conversion) costs £8 15s.

PERFORMANCE COMPARISONS—SPEEDWELL MINI-COOPER

	Mini-Cooper	Mini-Cooper S	Speedwell Mini-Cooper
Maximum speed			
Mean	85.0 m.p.h.	91.8 m.p.h.	104 m.p.h.
Best	87.4 m.p.h.	93.8 m.p.h.	107.1 m.p.h.
Acceleration from standstill			
0-30 m.p.h.	4.6 sec.	4.0 sec.	3.4 sec.
0-40 m.p.h.	7.7 sec.	6.9 sec.	5.0 sec.
0-50 m.p.h.	11.6 sec.	9.8 sec.	7.8 sec.
0-60 m.p.h.	17.2 sec.	12.9 sec.	10.4 sec.
0-70 m.p.h.	26.3 sec.	17.1 sec.	14.9 sec.
0-80 m.p.h.	47.3 sec.	23.2 sec.	19.0 sec.
0-90 m.p.h.	—	40.1 sec.	25.5 sec.
Standing 4-mile	21.1 sec.	18.8 sec.	17.8 sec.
Acceleration in the upper ratios			
10-30 m.p.h.	Top 10.2 sec. Third 7.4 sec.	Top 11.6 sec. Third 7.8 sec.	Top 10.5 sec. Third 7.5 sec.
30-40 m.p.h.	11.0 sec. 7.6 sec.	10.4 sec. 6.7 sec.	11.5 sec. 8.0 sec.
30-50 m.p.h.	12.7 sec. 7.8 sec.	11.0 sec. 7.6 sec.	12.5 sec. 8.6 sec.
40-50 m.p.h.	13.3 sec. 8.4 sec.	10.8 sec. 7.2 sec.	12.7 sec. 8.8 sec.
50-70 m.p.h.	16.5 sec. —	12.1 sec. 8.2 sec.	13.1 sec. 8.9 sec.
60-80 m.p.h.	30.6 sec. —	19.0 sec. 12.7 sec.	15.4 sec. 9.5 sec.
70-90 m.p.h.	—	26.4 sec. —	21.9 sec. —
Fuel consumption at steady speeds			
20 m.p.h.	55.5 m.p.g.	57.5 m.p.g.	55.5 m.p.g.
40 m.p.h.	55.0 m.p.g.	54.5 m.p.g.	51.5 m.p.g.
50 m.p.h.	47.0 m.p.g.	50.5 m.p.g.	49.5 m.p.g.
60 m.p.h.	41.0 m.p.g.	42.5 m.p.g.	44.7 m.p.g.
70 m.p.h.	34.5 m.p.g.	38.5 m.p.g.	41.2 m.p.g.
80 m.p.h.	—	32.0 m.p.g.	33.5 m.p.g.
90 m.p.h.	—	21.5 m.p.g.	26.2 m.p.g.
Overall fuel consumption	34.6 m.p.g.	35.8 m.p.g.	32.0 m.p.g.
Touring fuel consumption	40.5 m.p.g.	38.5 m.p.g.	37.5 m.p.g.



The Restall de luxe seats, fully adjustable for rake, are extremely comfortable. Lateral support is better than it looks.



The Modified "A" series engine has a capacity of 1,150 c.c., a claimed output of 82 b.h.p. at 6000 r.m.p. and 70 lb. ft. torque at 4,500 r.m.p. A brake servo fills most of the available space to the left of the engine.



Interior extras include the wooden fascia panel, rev counter, oil and temperature gauges, headlamp flasher, wood-rimmed steering wheel and, unseen, a modification to the gearchange lever that effectively cured the notorious "A" series gearlever chatter.

Reprinted from AUTOCAR, December 1963

Improving the performance of popular cars. SPEEDWELL RILEY ELF 110 m.p.h. from 1,150 c.c.



To capture emotions in words is always difficult, and driving this Speedwell-tuned Riley Elf is really an emotional experience. It is the fastest Mini (and fastest Riley) we have ever tested, with a best one-way maximum of 110 m.p.h. backed up by a mean of 109 m.p.h.; and acceleration is of the earnest kick-in-the-back variety. Yet throughout the range from fast idling at about 1,300 r.p.m. to the safe maximum of 7,500 r.p.m. the engine is sweet, smooth and docile without the slightest temperament.

The basis of the conversion, which can only be supplied with a new car, is the current Riley Elf Mk. II. However, the original 997 c.c. engine is removed and bored out by 2.5mm to 67.1mm and a Mini-Cooper crankshaft is fitted to increase the stroke by nearly 5mm to 81.3mm. The result is a capacity of 1,150 cc.. From here the engine is tuned to deliver over 90 b.h.p. gross by means of a special camshaft, aluminium cylinder head, and two 1.5in. S.U. carburettors, plus a Speedwell branch exhaust system with twin-tailpipe silencer. The engine in our test car had been on the test-bed just before it was fitted, and the peak performance figures were 93 b.h.p. gross at 7,400 r.p.m. and 78 lb. ft. torque at 5,500 r.p.m. (Compared with 40 b.h.p. gross at 5,250 r.p.m. and 52 lb. ft. at 2,700 r.p.m.)

With a power increase of no less than 132 per cent it comes as no surprise that the car is transformed. These is an extra 1,600 r.p.m. usable in all gears which extends the speed ranges with the standard gearbox to the useful maxima show overleaf. It is worth noting that the Speedwell Riley has a maximum of 77 m.p.h. in third, the same as the mean in top of the original car. Yet virtually no bottom-end tractability is lost, and the car will pull away quite happily from as low as 20 mph. in top.

Cruising on motorways in the nineties feels perfectly natural, and it is indeed a compliment to the Issigonis design concept that the standard chassis loses no stability when called upon to handle all the extra power. At 110 m.p.h. the ride is a little lively, but most of this might be attributed to the Michelin X tyres that were fitted. Standing starts, even in the dry, called for a special technique in feeding the power to the road as wheelspin was very easily provoked. Wide section wheels with Dunlop SP tyres (optional on the Mini Cooper S) would be an obvious choice if they could be obtained. Speedwell took some more figures with the car on ordinary-sized SPs and reckoned about 1sec was saved in getting away.

On corners the car could be made to run wide, or dive in simply on the throttle. Once or twice we were surprised to have to lift off in a sweeping bend (although this may have been courage failing rather than cornering power), in order to keep the little car on its line. Mini drivers will be used to this technique which is more pronounced on this car because of the extra power.

Brake modifications are confined to fitting harder linings and a vacuum-servo unit to reduce the pedal loads. Because the linings had not fully bedded in, we were able to make them fade quite easily, but were told they should improve with more mileage, although a conversion to discs would give greater security.

Prices (at 1st June 1964)

	£	s
1,150 c.c. Riley Elf, with brake servo	875	0
Oil cooler	13	10
Electronic rev counter	17	10
Rear anti-roll bar	7	0
Restall de luxe seats, each	25	0
Golde sunshine roof, fitted	60	0

Several extras were fitted to our car, and some of these must be regarded as essential. It would be very short-sighted to try to run such a car without a rev counter, as the safe limit of 7,500 r.p.m. is reached very quickly indeed and in the lower gears care is needed to avoid going into the "red". The Speedwell electronic unit fitted gives a steady reading, and has an easy-to-read scale. For motorway use, or even a continental holiday, it would be risky not to have the optional oil-cooler as well. Our car maintained its oil pressure even after some 10 to 15 miles at over 100 m.p.h. with this aid.

Almost incredible as it may sound, the overall petrol consumption for just over 500 miles of exciting driving was 32.2 m.p.g. Against this, one must offset a total of nine pints of oil in the same period, which even allowing for the extra piston clearances is excessive.

Although rather expensive (£25 each) the latest Restall front seats are very comfortable and infinitely adjustable for rake. They can be reclined fully by another mechanism, so that the normal setting is not lost. Most important though, they suit the Mini driving position—a point to watch with special seats.

This car was also fitted with the German Golde sunshine roof that includes a Perspex wind deflector, and even



Only clues to 93 b.h.p. under the bonnet are the aluminium cylinder head and twin S.U. carburetors. On the left is the brake servo unit, and low down on the right is the optional oil cooler.

Performance Data

Figures in brackets are for the Wolseley Hornet listed in AUTOCAR of 16 August 1963.

Acceleration times (mean): Speed range, gear ratios and time in seconds:			
m.p.h.	3-76 to 1	5-32 to 1	8-58 to 1
10-20	— (7.4)	— (7.4)	4.9 (5.5)
20-40	11.2 (10.7)	6.4 (7.5)	3.6 (3.5)
30-60	11.5 (11.5)	6.0 (9.4)	3.7 (—)
40-80	9.5 (10.4)	3.7 (14.1)	—
50-90	9.5 (23.1)	6.3 (—)	—
60-80	11.9 (—)	—	—
70-80	14.4 (—)	—	—
80-100	20.3 (—)	—	—

Overall fuel consumption for 500 miles: 32.2 m.p.g., 8.8 litres/100 km (23.2 m.p.g., 8.0 litres/100 km).

From rest through gears to:			
m.p.h.	3rd	4th	5th
30	3.4 sec.	—	—
40	5.6	—	—
50	7.5	—	—
60	10.7	—	—
70	14.3	—	—
80	19.6	—	—
90	27.4	—	—
100	44.6	—	—

Standing quarter-mile 17.6 sec (22.4 sec.)

Maximum speeds in gears:			
Top (mean)	3rd	4th	5th
108.6 (117.5)	77 (80)	66 (64)	58 (54)
118.6 (120.0)	98 (145)	88 (84)	78 (74)

"Absolutely standard" inside, except for the electronic rev counter (with red line at 7,500) and Restall de luxe seats. On the right of the floor is the little pedal for spinning the front wheels.



at 90 m.p.h. there was no buffeting inside the car with the roof open.

In its basic form with just the engine and brake conversions, Speedwell Performance Cars Ltd., 763 Finchley Road, London, N.W.11, can supply this "Executive Riley Elf—the answer to a business man's dream" as they call it—for £825. What we would deem the essential extras add about another £50, and then there are the unavoidable charges for delivery and number plates; but even so for less than £900 one owns a car that has very few rivals for performance and fun value.

There is only one serious criticism of the car and that is noise level*. Inside, the engine and road noise seem much less than on other Minis (the Riley variant does have more sound-deadening material as standard), but outside the exhaust note becomes decidedly deafening when power is called for. It is not that the car cannot be driven quietly, for as soon as a head turns one can lift off and potter past with hardly a burble, but the temptation to drive hard even in towns is so difficult to resist that perhaps the deterrent value of this fault makes it justifiable.

Memories of the car are vivid, but one of the most lingering is the impressive way it seemed to pick up its skirts and go when the road cleared, with a squeal and a snarl that really meant business.

* SPC Note: Supertone 85 now fitted on all engines.



MINI MOST

104 m.p.h. with a Speedwell Mini Cooper

With the exception of the highly tuned Zagato Mini (*The Motor*, March 14, 1962) that was much better shaped for dashing about at high speeds, the Speedwell Cooper seen above is the fastest Mini yet tested by *The Motor*. A mean maximum of 104 m.p.h. and a one-way best of 107 m.p.h. is not bad by 1,000 c.c. saloon standards, especially in a car that is meant for the road and not the track. Nor do the impressive performance figures speak entirely for themselves for the maximum was taken on a banked track which at this speed probably slowed the car on the corners by 2 or 3 m.p.h. When we tried again 1,000 miles later on a flat road, the car was no faster indicating that it may have lost a bit of tune. Despite a high final drive ratio fitted to give effortless high-speed cruising, the acceleration is also the best yet: even better figures would have been recorded with the standard ratios although, all told, the sacrifice is worth making. Ninety m.p.h. is a natural cruising speed (5,500 r.p.m.) and 100 m.p.h. doesn't need a very long straight to reach. With such good handling and steering and a small overall size, this Mini is certainly one of the fastest A-to-B cars we have driven.

The engine has Speedwell's "Clubman" alloy head, a capacity of 1,150 c.c. achieved by enlarging the bore and fitting special pistons, new valve gear, larger twin S.U.s, lightened and balanced parts and strengthened main bearings. For this £200-worth of mods, one expects a lot: one gets it. The engine always started easily, hot or cold, and the choke was seldom needed, even after leaving the car out on a cold night. Roughness at the fast idling necessary to avoid fouling the plugs (which never occurred during our test) gives way to smoothness as the revs rise: only above peak power (82 b.h.p.) at 6,800 r.p.m. did the engine begin to feel strained although a very adequate performance is available without exceeding the more durable 6,000 r.p.m. The red line was at 7,500 which we observed during the acceleration runs.

As on other Speedwell conversions we have tried, the throttle must be fed in progressively at low revs for the best acceleration, reaching full throttle by about 3,500 r.p.m. The technique seems unnatural at first but one soon becomes accustomed to it. In comparison with the tremendous surge that drags the car forward as the power really comes in, low-speed torque feels meagre but the stop-watch shows that flexibility is almost identical to that of a standard Cooper. Clearly it would be much better with similar gearing.

Throttle opening rather than revs affects the noise level so that cruising at 80 m.p.h. on a light throttle there is possibly less noise inside than from a standard Cooper. Only on hard acceleration does the extremely loud and characteristic bark from dual exhausts reverberate through the car and a good distance round it. Care was needed in towns to avoid attracting too much attention and the noise level could well be subdued without detracting from its stimulating effect*.

Fuel consumption on a tuned test car is usually regarded as an indication of how hard we drove it: a sort of enjoyment meter. On this basis, the 21.5 m.p.g. overall indicates tremendous entertainment—which it was. As the steady speed fuel consumption figures show, it would be possible with much more gentle driving to exceed the 34.6 m.p.g. recorded during the road test of the Mini-Cooper but it would take great (and pointless) determination not to drive the Speedwell car hard. Most owners would probably be a little kinder than we were and would almost certainly record a better overall figure.

The mods did not end with the engine. Of the many other extras, the Restall de luxe seats were outstanding and made a major contribution to our enjoyment of the Car. As our tallest (6ft. 4in.) member observed, "This is the first Mini I have been really comfortable in". His opinion was echoed by everyone else, the sacrifices being rather inaccessible hand-brake and no room for second gear if the passenger's seat was pushed forward.

* SPC Note: Supertone 85 now fitted on all engines.

SPEEDWELL CLUBMAN ENGINE

ROAD TEST REPORT

Reprinted from AUTOCAR April 1961

Spritely Speedwells take Class Records

Speedwell took over to Belgium last week an Austin-Healey Sprite G.T. coupé and a special bubble-topped streamliner, to make some officially timed high-speed runs; these took place on the rather blustery morning of 13 April, on a stretch of the Antwerp-Liège motorway. Graham Hill, director of Speedwell Performance Conversions, Ltd., did four runs with the G.T. coupé, two in each direction over the kilometre. These were all that was required to attain the target speed 110.9 m.p.h. Considering that the car used is the one which has been raced so successfully by Venner-Pack, and has received little attention since the beginning of the season, this was an extremely meritorious performance.

George Hulbert then took out the fully streamlined car designed by himself and Frank Costin; because of breakdowns in the timing apparatus, and the need for small modifications to the cockpit to prevent the driver from being affected by fumes, not so many runs could be made as it was hoped, before the road was opened again. On a methanol-based fuel, a mean time of 128.78 m.p.h. was recorded; when this fuel was replaced by a nitro-additive mixture, a run at

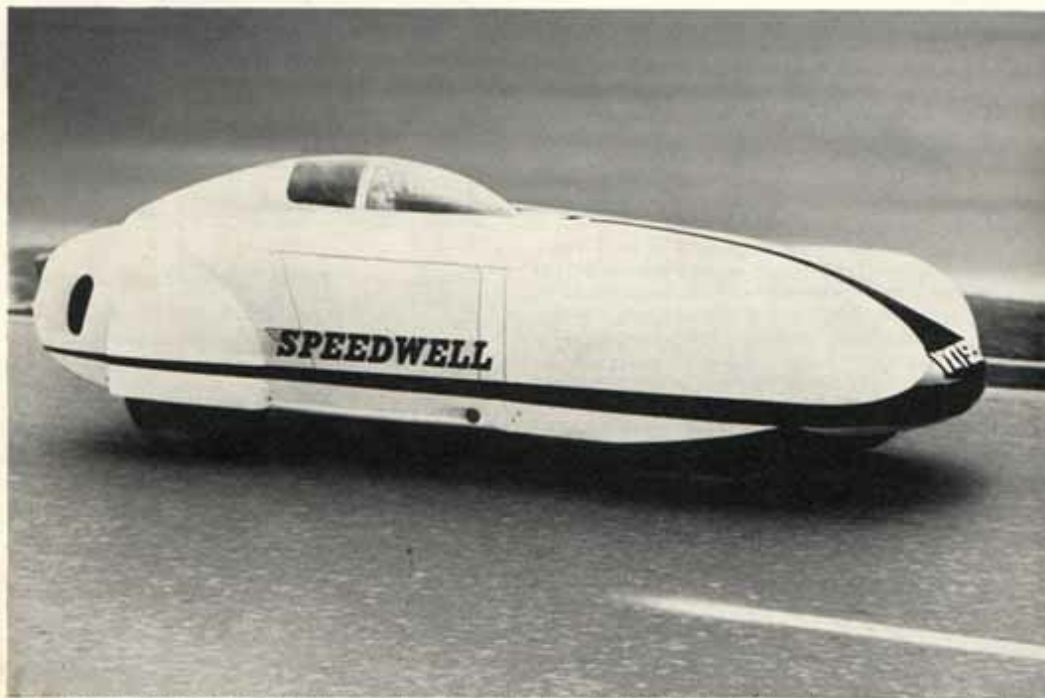
132.2 m.p.h. was achieved. After four runs, two each by George Hulbert and Graham Hill at around the 132 m.p.h. mark, there was insufficient time left, unfortunately, for experiments with larger tyres. Since the engine speed went above the power peak with the smaller tyres, it is safe to assume that the odd mile an hour or more could have been obtained with a higher overall ratio, provided by larger tyres. Both cars collected their respective Belgian National Class records.

Considering that the B.M.C. EX.219 International G class record car—also based on a Sprite—achieved, in blown form, 146.95 m.p.h., for an hour, this Speedwell venture, with only a minute proportion of the B.M.C. resources, is indeed praiseworthy. What is more, basically the body and chassis are still Austin-Healey Sprite.

The future of this special is still undecided, but one can safely assume that it will not remain idle.

Figures for the fastest runs made by both cars, and which when ratified will stand as the new flying kilometre, Belgian National Class G records, are:

Speedwell Streamliner 132.2 m.p.h. (212.8 k.p.h.);
Speedwell G.T. Coupé, 110.9 m.p.h. (178.5 k.p.h.).



In spite of difficult conditions caused by a brisk cross-wind, both Sprite G.T. Coupé and Streamliner appeared remarkably stable. This photograph shows the special streamlined Sprite at speed on the timed kilometre.

Speedwell Performance Conversions Ltd., England

Reprinted from MOTOR May 1963

105 m.p.h. from a Speedwell-tuned M.G.

A racing performance doesn't usually mix with town docility but Speedwell has well combined the two on its Clubman 85 conversion of an M.G. Midget. Fairly expensive tuning (see panel) has produced a car that will perform well on both road and track. Although the gearbox and high revs must be used to get the best from this conversion, a usable top gear range from 20 to 105 m.p.h. indicates its versatility.

Keeping the revs down, the car will wobble along with modest acceleration and very little temperament, making it perfectly acceptable for everyday use. At 4,000 r.p.m. the power comes in with an impressive surge, the raucous exhaust on full throttle fully justifying its performance. The improvement over a standard Mk. 2 Sprite is shown by the performance figures on page 59 but as a further yardstick, it is interesting to note that 60 m.p.h. is reached a full two seconds sooner than an 1,800 c.c. M.G. B—and it uses less petrol into the bargain.

Our test car was the conspicuous yellow-with-a-black-stripe Midget with which Speedwell coloured its stand at the Racing Car Show. It is one of its guinea-pig cars and had a lot of non-standard equipment and modifications making it unrepresentative of an off-the-peg Midget in many ways. Bosch ignition (coil and distributor), excellent Restall seats, a lightweight "Monza" bonnet, Kenlowe thermostatic fan and extensive sound damping all complemented the conversion: the drum brakes and pre-baulk ring synchromesh of the earlier Mk. 2 Midgets on which the car was based, were perhaps unworthy of it.

With little or no choke, the engine would start easily from cold and deliver clean power almost immediately without any warming-up period. At tickover, the exhaust spluttered unevenly from the two impressive exhaust pipes that emerge diagonally from beneath the driver's door. (This arrangement was not for sporty effect but simply because a pipe of that length was found to give the best results.) Although an occasional blip on the throttle would keep the engine running indefinitely at traffic hold-ups, a more healthy rev-up was often needed to avoid spluttery acceleration after any low-speed running. This was the engine's only sign of temperament and was soon accepted with familiarity.

Due partly to the effect of long inlet ramming pipes from a single Weber carburettor, full throttle did not give the best acceleration below 4,000 r.p.m. Our best times against the stop-watch were recorded with progressive pressure on the accelerator, a technique played by ear as the most fruitful exhaust note indicated the right amount of throttle.

Throttle opening appeared to affect the crisp and smooth exhaust rather more than engine speed; snap opening would produce loud power roar—even at quite low r.p.m.—yet 85 m.p.h. could be maintained indefinitely on part throttle with surprisingly little fuss.



Seen at the Racing Car Show (with hard top in place of soft). Side air intakes of the "Monza" bonnet feed air to oil coolers. Ciblé headlights give adequate illumination.

The sound-damping felt applied liberally to both sides of the bulkhead does not come with the conversion, but it seems a worth-while extra as little mechanical noise could be heard from inside the car. Lifting the bonnet reveals that there is in fact very little to hear—a sobering discovery since this is one of those rare engines that can be taken to at least 6,500 r.p.m. without any signs of stress. Between 6,500 and the limit of 7,500, mild "chattering" mars an otherwise very smooth engine.

As the figures show, steady speed fuel consumption was generally slightly better than that of a standard Sprite. Overall, there was a drop of 2 m.p.g. to 28.6 surprisingly good considering that performance testing accounted for much of our mileage. Even on 100 octane petrol, the engine can be made to pink. Oil consumption was heavy.

We enjoyed this Clubman 85 conversion which gave a performance worthy of handling and steering that had been further improved by an anti-roll bar at the front and increased castor angle. It would be even better with the baulk ring synchromesh and disc front brakes of the current cars. Moreover, the extra 100 c.c. should give a better performance.

Of the other non-standard items, the Kenlowe fan worked unobtrusively and engine temperature remained normal. The Restall seats were very good, giving ample side and thigh support and remained comfortable on long journeys. A knurled knob at the side adjusted the squab angle to anything from upright to semi-reclining, allowing even very tall drivers to get well away from the steering wheel to a comfortable longarm driving position.

Hinging at the front, the glass-fibre "Monza" bonnet gave exceptional accessibility to the engine but was secured with rather poor catches. The car's top speed of 104 m.p.h. indicates that it is a good wind-cheating shape.

Another extra we liked were the outside door catches which dispensed with the need to open a window and grope for an inside handle as on standard cars.



With adjustable squabs, the Restall seats gave good support and were very comfortable. Note the exhaust pipe exit.

John Bolster Tests A Speedwell Midget

The details of the M.G. Midget, and its companion Austin-Healey Sprite model, are well known. This is an entirely conventional small sports car, with a front engine and rear drive.

The latest Midget has a long-stroke engine of 1,098 c.c. The subject of the current test is a 1961 Midget, which originally had a 950 c.c. unit. This has been bored out to 1,080 c.c. by Speedwell but retains the less exaggerated stroke dimension of the earlier engine. In consequence, it is more suitable for sustained operation at high revolutions, the stroke being 76.2 mm. against 83.7 mm.

This particular machine is tuned almost up to Formula Junior standards, but retains an acceptable degree of flexibility. It has been modified to "Clubman 85" specification, which costs £250 when the customer's existing unit is used as a basis. A special steel crankshaft is dynamically balanced, together with the light flywheel, connecting rods,

The Conversion in Detail

Capacity is increased to 1,100 c.c. (1,200 c.c. on current engines). Larger valves with double springs operate in a machined and polished light alloy cylinder head with 11 to 1 compression ratio. A fairly "hot" camshaft is used. Strength and durability have not been neglected: pistons (flat-topped racing pattern), special crankshaft lightened flywheel and con rods are fabricated and, where appropriate, track tested. A single Weber carburettor with long inlet manifold replaces the standard engine's twin D.U. layout. There is also a new exhaust system. Max. power, 87 b.h.p. at 7,000 r.p.m. (against 65 b.h.p. at 5,500 of the standard car). Price of a complete Clubman 85 engine, £250.

Performance Data

Test conditions—For Standard Sprite—Cool and dry with 10-12 m.p.h. wind. Temperature, 40-44 degrees, barometer 29.8 in. For Speedwell Midget—Warm and dry with 10-15 m.p.h. wind. Temperature, 52-65 degrees, barometer 29.5.

Maximum Speed	Standard Sprite		Speedwell Midget	
	Mean	Best	Mean	Best
Mean	87.5 m.p.h.	92.5 m.p.h.	104.0 m.p.h.	105.5 m.p.h.
Best	87.5 m.p.h.	92.5 m.p.h.	104.0 m.p.h.	105.5 m.p.h.
Acceleration from standstill				
0-30 m.p.h.	4.4 sec.	3.7 sec.	4.4 sec.	3.7 sec.
0-40 m.p.h.	7.5 sec.	7.4 sec.	7.5 sec.	7.4 sec.
0-50 m.p.h.	11.1 sec.	10.6 sec.	11.1 sec.	10.6 sec.
0-60 m.p.h.	16.6 sec.	16.4 sec.	16.6 sec.	16.4 sec.
0-70 m.p.h.	24.4 sec.	23.8 sec.	24.4 sec.	23.8 sec.
0-80 m.p.h.	35.2 sec.	34.5 sec.	35.2 sec.	34.5 sec.
0-90 m.p.h.	48.8 sec.	48.1 sec.	48.8 sec.	48.1 sec.
Standing 1/4 mile	29.9 sec.	29.3 sec.	29.9 sec.	29.3 sec.
Acceleration in the upper ratios				
20-40 m.p.h.	Top 10.9	Third 7.0	Top 10.9	Third 6.6
30-50 m.p.h.	10.5	7.3	10.5	6.9
40-60 m.p.h.	13.0	8.6	11.4	6.7
50-70 m.p.h.	15.3	11.9	11.2	6.6
60-80 m.p.h.	21.9	—	12.2	—
70-90 m.p.h.	—	—	22.1	—
Fuel consumption at steady speeds				
30 m.p.h.	54.5 m.p.g.	58 m.p.g.	54.5 m.p.g.	58 m.p.g.
40 m.p.h.	51 m.p.g.	50 m.p.g.	51 m.p.g.	50 m.p.g.
50 m.p.h.	44 m.p.g.	47.8 m.p.g.	44 m.p.g.	47.8 m.p.g.
60 m.p.h.	38.5 m.p.g.	40 m.p.g.	38.5 m.p.g.	40 m.p.g.
70 m.p.h.	29.5 m.p.g.	33 m.p.g.	29.5 m.p.g.	33 m.p.g.
80 m.p.h.	25 m.p.g.	28.5 m.p.g.	25 m.p.g.	28.5 m.p.g.
90 m.p.h.	—	24.5 m.p.g.	—	24.5 m.p.g.
Overall fuel consumption	30.8 m.p.g.	28.6 m.p.g.	30.8 m.p.g.	28.6 m.p.g.

Reprinted from AUTOSPORT July 1963

and flat-top solid-skirt pistons. A new camshaft is employed with special rockers, giving extra leverage and a higher valve lift. The Speedwell light-alloy cylinder head contains large inlet valves and gives a compression ratio of 11 to 1. The manifolds are special and the carburettor is a twin-choke Weber 45 DCOE.

The exhaust system is very carefully tuned for length, and the result of all this is 89 b.h.p. at 7,000 r.p.m. with a maximum torque of 78 lb.-ft. at 5,500 r.p.m. Obviously the potentialities of such a power unit are very great.

A standard chassis is used, but great trouble has been taken to put it together about right. Commercial tolerances in assembly often cause standard Midgets and Sprites to steer badly because the designed suspension geometry is not reproduced. A speedwell anti-roll bar is fitted in front.

Bodywork modifications include the fitting of a Speedwell "Monza" bonnet. This has central ducting to feed the water radiator, carburettor, and fresh-air intake, while the side ducts look after twin oil radiators. The cost of the "Monza"



Massive inlet pipes are fed by a single Weber carburettor which draws air through a heavily insulated channel from the bonnet intake. There is a lot of worth-while sound damping too.

bonnet is £49 10s. A Speedwell "Clubman" hard top is also fitted, costing £37 10s. These components transform the aerodynamic stability of the car as well as reducing drag. The tail section of the current Midget is not well streamlined and even better results can be obtained with an early Sprite shell.

The performance of this little car on the road is very fine indeed. Although the engine is quite flexible, it is not at its best below 4,000 r.p.m., at which speed one is really in business. The power is well maintained up to 7,500 r.p.m. and so the effective band is a wide one. I was given permission to touch 8,000 r.p.m. but I obtained the best acceleration by changing up at 7,500 r.p.m., so this figure has been used in quoting the maxima in the gears. At the timed maximum speed of 105.8 m.p.h., the engine was turning at an indicated 7,300 r.p.m.

The fierce acceleration is emphasized by the standing quarter-mile time of 16.7 seconds, during which a speed of 80 m.p.h. was exceeded. Perhaps even more impressive, for so small a car, is the 0-100 m.p.h. time of 40.5 secs. The time taken to reach 80 m.p.h. from a standstill is identical to the 0-60 m.p.h. figure of a standard M.G.

Quite one of the best features of the car is the quiet exhaust system, which allows full acceleration to be used in towns. I did oil up one sparking plug in London but the car is without vice on the open road. Bucket seats, with adjustable back angles, are fitted. However, the adjusting wheel is strategically placed to catch my left funny bone during energetic manoeuvres, so I cannot praise this accessory.

Very remarkable is the stability at the maximum speed. Cars as small as this sometimes need holding at three-figure velocities but with this M.G. a couple of fingers on the wheel suffice. The over-steering tendency of the standard model has gone, the stability in side winds also being greatly improved.

To tune an engine while using the standard bottom end is either to accept rigid limitations or to risk a major blow-up. If you start off with a special crankshaft and a balancing job, you are halfway towards safe revolutions. A light flywheel is easy on the crank and, of course, the oil radiators are as good

as an insurance policy. I covered many miles at a genuine 100 m.p.h. and the engine remained smooth and kept perfectly cool. An electric fan was fitted ahead of the radiator.

I was surprised to find that I averaged 26 m.p.g. during the flat-out performance testing. One could certainly rely on 30 m.p.g. at normal road speeds. The oil consumption was moderate and did not rise excessively at sustained high speeds.

I came to the conclusion that Speedwell have all the answers where the small B.M.C. engine is concerned. They can supply speed equipment for quite moderate tuning operations, but for the man who really wants to motor the "Clubman 85" job is the answer. You certainly can't break it, because I've tried! For further particulars, contact Speedwell Centre, Cornwall Avenue, London, N.3.

Specification and Performance Data

Car Tested: Speedwell M.G. Midget. Price of special engine modifications £250. Bonnet £49 10s. Hard top £37 10s.

Engine: Four-cylinders 87 mm. x 76.2 mm. (1,098 c.c.). Pushrod operated overhead valves in special light alloy head. Compression ratio 11 to 1. 89 b.h.p. at 7,000 r.p.m. Weber twin-choke carburettor. Lucas coil and distributor.

Transmission: Single dry plate clutch, four-speed gearbox with synchromesh on upper three gears and short central lever, ratios 4.22, 3.73, 3.09 and 1.30 to 1. Open propeller shaft. Hopped rear axle.

Chassis: Standard M.G. chassis with independent front suspension by wishbones and rear axle on quarter-elliptic springs. Disc front brakes and drum rear. Extra Speedwell anti-roll bar and wire wheels.

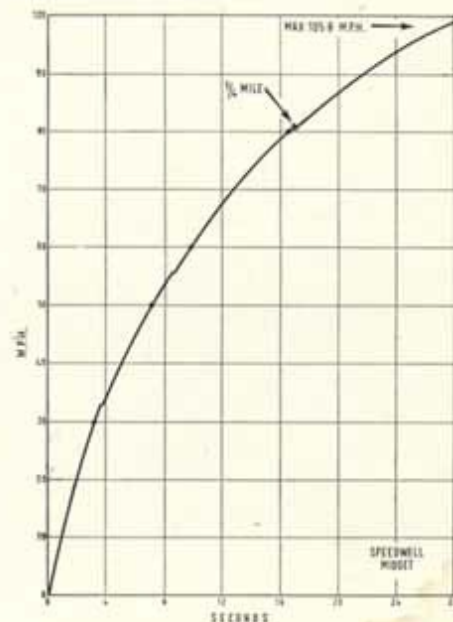
Equipment: Standard equipment plus oil temperature gauge and electric radiator fan with thermostat switch.

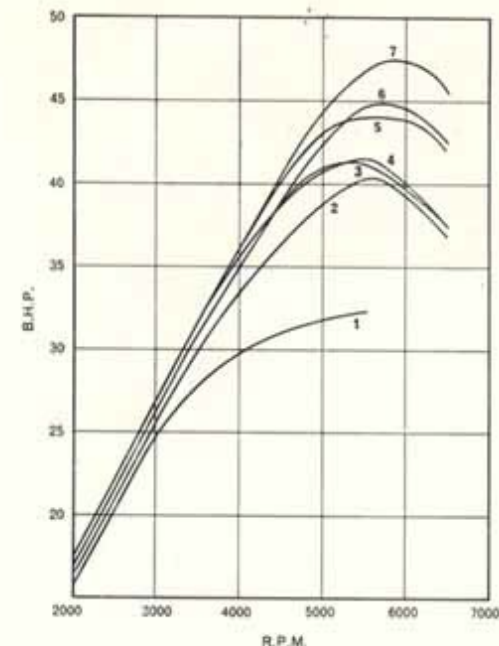
Dimensions: Wheelbase 6 ft. 8 ins. Track (front) 2 ft. 8 1/2 ins. (rear) 2 ft. 8 1/2 ins. Weight 13 cwt. (approx.).

Performance: Maximum speed 105.8 m.p.h. Speeds in gears, 3rd, 81 m.p.h.; 2nd 55.5 m.p.h.; 1st, 33 m.p.h. Standing quarter-mile 16.7 secs. Acceleration: 0-30 m.p.h. 3.7 secs.; 0-50 m.p.h. 7.3 secs.; 0-60 m.p.h. 9.1 secs.; 0-80 m.p.h. 16.4 secs.; 0-100 m.p.h. 40.5 secs.

Fuel Consumption: 28-30 m.p.g.

Acceleration Graph





Actual brake horsepower curves taken from examples of the various Speedwell kits fitted to an 850 c.c. Mini power unit.

- 1 850 c.c. BMC Mini
- 2 With Speedwell SU Sport-kit
- 3 With Speedwell Weber Sport-kit
- 4 With Speedwell Amal Sport-kit
- 5 With Speedwell Weber GT-kit
- 6 With Speedwell SU GT-kit
- 7 With Speedwell Amal GT-kit

Fuel

90 Octane petrol available in most European countries and equivalent to British 'Premium' grades is suitable for both Sport and GT kits. For maximum performance from GT kits, however, 100 Octane is recommended.

Order Reference

Packing Data

Description	Cat. No.	Size	Gross Weight
SU Sport Kit	SA.1	36" x 12" x 5" (90 x 30 x 12.7 cm)	20 lb. (9 Kg.)
Amal Sport Kit	SA.1/A	" " " " "	24 lb. (10.8 Kg.)
Weber Sport Kit	SA.1/W	" " " " "	28 lb. (12.6 Kg.)
SU GT Kit	GT.A1	39" x 19" x 7" (100 x 48.2 x 17.8 cm)	40 lb. (18 Kg.)
Amal GT Kit	GT.A1/A	" " " " "	44 lb. (20 Kg.)
Weber GT Kit	GT.A1/W	" " " " "	48 lb. (21.8 Kg.)

NOTE:

When ordering for Mini-Traveller, Van affix letters TF to Cat. No. i.e. GT.A1/TF. For (Elf or Hornet) Letter E i.e. SA.1/E.

BMC 850 c.c. MINI

COMPLETE ENGINE KITS

SPEEDWELL

ENGINE KITS and PARTS



Speedwell Engine Kits are complete sets of components developed by exhaustive dynamometer and road testing to ensure a specific performance improvement. They provide the greatest possible power increase for a given financial outlay with economy and reliability. Kits are available in several stages of tune depending on the engine and road-holding characteristics of the car concerned. Each kit is complete to the last detail with comprehensive instructions for the experienced mechanic or enthusiast wishing to fit his own equipment.

For the 850 Mini range there are two stages of tune, each with a choice of three carburettor types. Every component of the kit has its function to perform, carburettors and valve springs to raise the RPM limit and exhaust silencer to reduce back pressure. In the GT Kits, Speedwell Light-Alloy cylinder heads with 10.5 to 1 compression ratio provide high thermal efficiency and further improved mixture flow.

manifolds to feed increased quantities of fuel mixture, to reduce back pressure.

SU Sport Kit—Cat. No. SA.1

Contents

- | | |
|--|---------------------------------|
| SU carburettor, Type HS.2 | Choke cable with dashboard knob |
| Parts for adapting existing carb. to match | Linkages, springs, etc. |
| Air bells | Supertone silencer |
| Valve springs. Heavy duty single type | Splash plate |
| Inlet manifolds. Speedwell design | Moly slip |
| Balance pipe | Nuts and bolts, etc. |
| | Gaskets and badge |
| | Fuel pipe and clips |



Amal Sport Kit—Cat. No. SA.1/A

Contents

- | | |
|---------------------------------------|---------------------------------|
| Twin Speedwell Amals | Choke lever |
| Cables and couplings | Supertone silencer |
| Valve springs. Heavy duty single type | Splash plate |
| Inlet manifolds. Speedwell design | Moly slip |
| Balance pipe | Nuts and bolts, 'O' rings, etc. |
| | Gaskets and badge |
| | Fuel pipe and clips |



Weber Sport Kit—Cat. No. SA.1/W

Contents

- | | |
|---------------------------------------|-----------------------|
| Weber carburettor | Cable stop and spring |
| Air-entry flange | Supertone silencer |
| Valve springs. Heavy duty single type | Moly slip |
| Inlet manifold. Cast light alloy | Nuts and bolts, etc. |
| | Gaskets and badge |
| | Fuel pipe and clips |



Further tuning equipment is available in addition to the kits such as special camshafts, rocker gear and 960 c.c. pistons. These must be used with caution as the limits of mechanical reliability of the engine are approached. Speedwell will be pleased to advise on further tuning. With "Sport" and "GT" Kits there are no exchange parts to be returned. All original parts can be retained so that the conversion may be readily changed over to a new car.



PERFORMANCE DATA

SA.1

The SU carburettor Sport kit offers extra performance at the most economical price. One extra carburettor is supplied and the existing one from the car is adapted to form a twin pair.

Max. speed	0-50	0-60
79 m.p.h.	14.0 secs.	19.3 secs.
Approx. fuel consumption	—37 m.p.g.	



SA.1/A

The Amal carburettor Sport kit gives the greatest increase in power possible without resort to special cylinder heads. Its reasonable cost makes it an ideal first step for the enthusiast.

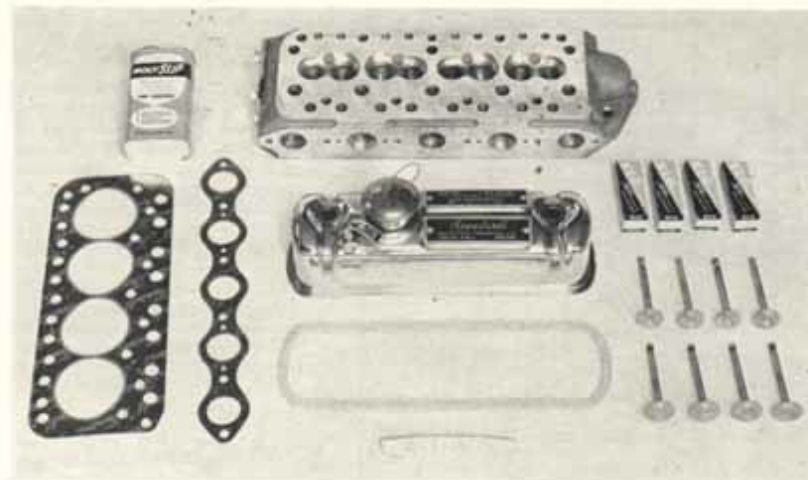
Max. speed	0-50	0-60
82 m.p.h.	11.8	17.0
Approx. fuel consumption	—35 m.p.g.	



SA.1/W

The Double-choke Weber Sport kit gives a remarkable power gain with good fuel economy and retention of tune.

Max. speed	0-50	0-60
81 m.p.h.	12.0 secs.	17.5 secs.
Approx. fuel consumption	—37 m.p.g.	



GT Kits

The GT kit consists of all the parts in the Sport kit plus the following:—

Speedwell Alloy cylinder head, Type 1GT	Exhaust valves in KE 965 steel
Valve guides (fitted)	Special gasket set
Inlet valves in EN 52 steel	Plated rocker cover and Sparking plugs



Performance Data

SU-GT. kit—Cat. No. GT.A1

Combining the Speedwell alloy cylinder head with twin SU carburetors, this kit will equal standard Mini-Cooper performance at economical cost.

Max. speed	0-50	0-60
84 m.p.h.	11.4 secs.	16.5 secs.
Approx. fuel consumption	—36 m.p.g.	



Amal-GT Kit—Cat. No. GT.A1/A

The most powerful engine kit for the Mini enthusiast. Amal carburetors and alloy cylinder head together will, under slightly favourable conditions, take the speedo right "off the clock."

Max. speed	0-50	0-60
86 m.p.h.	10.6 secs.	15.4 secs.
Approx. fuel consumption	—34 m.p.g.	



Weber-GT Kit—Cat. No. GT.A1/W

Remarkable acceleration is the feature of the neat installation provided by this kit combining the Weber carburettor and Speedwell Alloy cylinder head.

Max. speed	0-50	0-60
83 m.p.h.	11.4 secs.	16.6 secs.
Approx. fuel consumption	—36 m.p.g.	

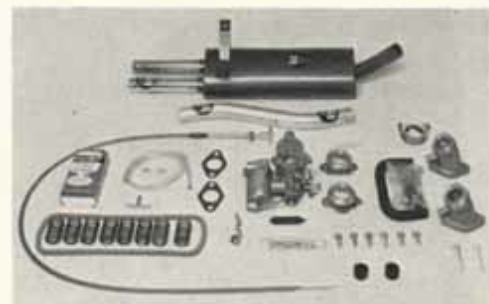
COMPLETE ENGINE KITS

ENGINE KITS and PARTS

Speedwell Engine Kits are sets of components specially selected to give the required performance improvement with economy, reliability and ease of installation. Extensive dynamometer and road testing lies behind each specification ensuring the suitability of every component and avoiding the disappointing results frequently produced by indiscriminate fitting of speed equipment.



For the BMC 'A' Series engine as fitted to the Austin A.40, Morris Minor 1000, etc., there are two kits—the "Sport Kit" and the "GT Kit". Experience has shown these to provide the type of performance increase most suitable for every day use on the roads. It is, of course, possible to tune these engines further for sports and racing purposes. The Speedwell method is to fit flat-top racing-pattern pistons and then apply the engine kits suitable for the Austin-Healey Sprite Mark II (950 c.c.) described in the appropriate leaflet.



Contents

- | | | |
|----------------|--------------------------|---------------------|
| SU Carburettor | Inlet Manifolds | Supertone Silencers |
| Linkages | Nuts, Bolts, etc. | Gaskets |
| Air Bells | Balance Pipe | Valve Springs |
| Moly slip | Choke Cables and Control | Badge, etc. |

Sport Kit

The Sport Kit obtains its performance gains by the use of twin SU carburetors, improved valve springs and a special exhaust system.

The kit is complete to the last detail and full instructions are given suitable for the skilled mechanic or the enthusiast wishing to fit his own equipment. Certain cars are already fitted with a single HS2 carburettor, in these cases only one carb. is supplied in the kit.

Performance Data

The A.40 is given as a typical example:—
 Max. speed 0-50 0-60
 77 m.p.h. 15.0 23.0 secs.
 Approx. fuel consumption—31 m.p.g.

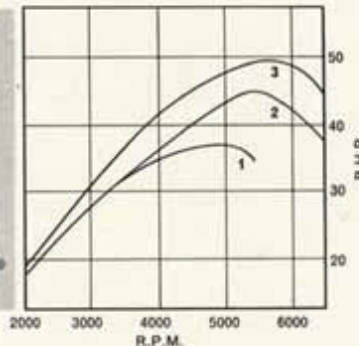
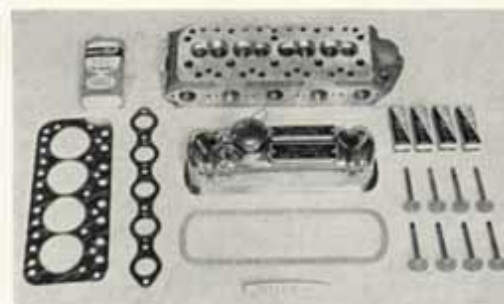


● 12 Months Guarantee ●

P.T.O. ▶

GT Kits

The GT Kit includes all the parts from the Sport Kit plus a Speedwell Light Alloy Cylinder Head, type 1GT. This gives a compression ratio of 10.5 to 1 and porting of improved gas-flow shape. Exceptional torque is obtained throughout the range. There are no exchange parts to be returned and all the original equipment is retained so that the conversion can easily be transferred to a new car.



Additional Parts supplied with GT Kits

- | | |
|--------------------|---------------------------|
| Cylinder Head, 1GT | Valve Guides (fitted) |
| Inlet Valves—EN 52 | Exhaust valves—KE965 |
| Gasket Set | Plated Rocker Cover, etc. |
| Spark Plugs | |

- 1 950 cc BMC A-TYPE
 2 WITH SPEEDWELL SPORT-KIT
 3 WITH SPEEDWELL GT-KIT



Performance Data

The A.40 is given as a typical example:—
 Max. speed 0-50 0-60 m.p.h.
 82 m.p.h. 12.5 18.0 secs.
 Approx. fuel consumption—30 m.p.g.

Order Reference

Packing Data

Vehicle Type	Sport Kit Cat. No.	GT Kit Cat. No.	Size	Weight
Austin A.40	SA.2	GT.A2	Sport Kit: 36" x 12" x 5"	20 lb.
Austin A.40 Mark II (950 c.c.)	SA.2/II	GT.A2/II		
Austin A.35	SA.4	GT.A4	90 x 30 x 12.7 cm.	9 Kg.
Morris Minor 1000 to 1961	SA.15	GT.A15	GT Kit: 39" x 19" x 7"	40 lb.
Morris Minor 1000 from 1961 (950 c.c.)	SA.15/II	GT.A15/II		

For further tuning see leaflets on Pistons and Complete Engine Kits for Austin-Healey Sprite Mark II.

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

COMPLETE ENGINE KITS

ENGINE KITS and PARTS

Speedwell complete engine kits have been developed to give a certain definite degree of performance improvement with reliability and at reasonable cost. The kits, consisting of selected Speedwell components, are complete to the last detail with instructions to enable the enthusiastic owner to fit the equipment himself or have it fitted by any garage. There are no "exchange" components for return and all the original components are retained so that the conversion can easily be transferred when changing to a new car.

For the Morris 1100 there are three kits available, the "Sport Kit," "GT Kit" and "Clubman Kit." The MG 1100 can be treated similarly but starts with the second stage. Morris 1100 & Austin 1100 are identical.



Sport Kit

As the Morris 1100 is already fitted with a single SU carburettor, the most economical first stage consists of a second carburettor and the necessary parts to make up a twin pair. Speedwell single valve springs for higher RPM and a Supertone exhaust system complete the kit.

Contents

- | | |
|--------------------------|--------------------|
| SU carburettor, Type HS2 | Air bells |
| Valve springs | Inlet manifolds |
| Linkages | Balance pipe |
| Choke cable and control | Supertone silencer |
| Nuts, bolts, etc. | Molyslip |
| Gaskets | Badge |

Performance Data

Maximum speed	0-50 secs	0-60 mph
	82 mph	12.9 secs
		19.0 secs

Approximate fuel consumption 30 mpg

NOTE: This performance equals or betters the MG 1100

GT Kit

The GT kit includes the parts of the Sport kit plus the Speedwell light alloy cylinder head—Clubman Pattern. This has large inlet valves, efficient porting and a compression ratio of 9.5 to 1. When fitted to an MG 1100 the compression ratio is 10.5 to 1. Speedwell double valve springs enable the recommended maximum of 6500 RPM to be readily reached.

Contents

- | | |
|------------------------|-------------------------------|
| Sports Kit complete* | Light alloy cyl. head, Type C |
| Valve guides (fitted) | Large inlet valves, KE 965 |
| Exhaust valves, KE 965 | Plated rocker cover |
| Spark plugs | Special gasket set |
- * For the MG 1100 the GT kit is supplied without additional carb parts.



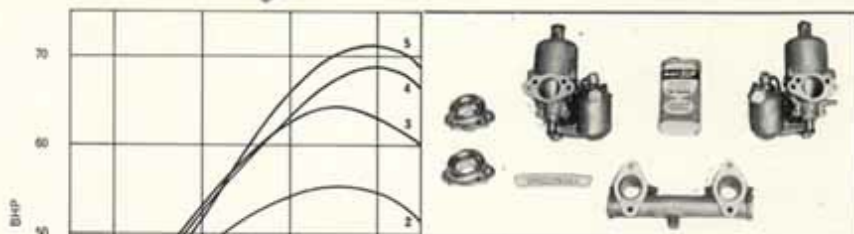
GT Performance Data

Maximum speed	0-50 mph	0-60 mph
	88 mph	11.5 secs
		17.1 secs

Approximate fuel consumption 30 mpg

Clubman Kit

The Clubman Kit suitable for both cars combines the Speedwell light alloy cylinder head with a set of large SU carburetors—1½", type H4.



- Contents*
- | | |
|-----------------------------------|-----------------------|
| Plated rocker cover | Valve guides (fitted) |
| Linkages, choke parts | Special gasket set |
| Exhaust valves, KE 965 | Spark plugs |
| Badge, nuts and bolts | Fuel pipe set |
| Large inlet valves, KE 965 | Inlet manifold |
| Light alloy cylinder head, Type C | Molyslip |
| Twin SU carbs.—1½", H4 | |

Performance Data

Maximum speed	0-50 mph	0-60 mph
	93 mph	10.3 secs
		15.4 secs

Approximate fuel consumption 29 mpg

- 1 MORRIS 1100
- 2 WITH SPEEDWELL SPORT-KIT
- 3 WITH SPEEDWELL GT-KIT
- 4 WITH SPEEDWELL CLUBMAN-KIT
- 5 AS 4 PLUS SPEEDWELL ROCKER-GEAR

Further Tuning

For competition purposes a Speedwell rocker gear set may be added to the Clubman Kit. This gives the effect of a higher-lift and longer-overlap camshaft, increasing maximum power at the expense of a slight reduction in torque at low RPM. Over 70 BHP can be obtained, giving a maximum speed of 94 mph—0-50 mph in 9.8 secs. and 0-60 mph in 14.7 secs. A maximum RPM limit of 6500 is recommended.

Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Sport Kit	SA.11	36" x 12" x 5" 90 x 30 x 12.7 cm	20 lbs. 9 Kg.
GT Kit	GT.A11	39" x 19" x 7" 100 x 48.2 x 17.8 cm	40 lbs. 18 Kg.
GT Kit (MG 1100)	GT.A11/MG		
Clubman Kit	CM.A11		
Speedwell Rocker Set	VA.100		

Due to its size the tailpipe is packed separately.

Speedwell engine conversions for the BMC 'B' series are divided into two groups: those cars fitted with a single carburettor and those fitted with twin carburettors as standard. For the first group, Speedwell produce a Sport Kit consisting of a number of components specially developed to give a specific increase in engine performance with reliability and economy. It is complete in every detail, includes full fitting instructions and does not require the return of any exchange components. For the second group, there are no complete kits but three forms of special cylinder head are available which can be used in conjunction with Speedwell Supertone exhaust systems to give greatly improved performance. These products are described in separate leaflets as well as below.



Sport Kit

Austin A.55 and A.60 Farina Wolseley 15/60 and Morris Oxford V and VI Farina, Wolseley 1500

The Sport Kit is designed to give a useful performance increase with economy both of first cost and fuel consumption. An additional SU carburettor type HS2 is supplied together with the parts necessary to make up a twin pair with the car's existing carburettor. Speedwell valve springs raise the RPM limitations and a Supertone exhaust minimises back-pressure losses. The complicated accelerator arrangement on the Farina cars is replaced by a simple cable-operating pedal.



Contents

SU carburettor, Type HS2	Inlet manifolds
Valve springs	Balance pipe
Linkage parts	Fuel piping
Choke cables and control	Accelerator pedal
Throttle cable	Supertone silencer
Carburettor air bells	Molyslip
Gaskets	Nuts, bolts, badge, etc.

Performance data

For Austin A.60 Farina

Maximum speed	0-50 mph	0-60 mph
83 mph	12.4 secs	18.6 secs
Approximate fuel consumption	24 mpg	

● 12 Months Guarantee ●

P.T.O. ▶

Speedwell engine conversions for the BMC 'B' series are divided into two groups: those cars fitted with a single carburettor and those fitted with twin carburettors as standard. For the first group, Speedwell produce a Sport Kit consisting of a number of components specially developed to give a specific increase in engine performance with reliability and economy. It is complete in every detail, includes full fitting instructions and does not require the return of any exchange components. For the second group, there are no complete kits but three forms of special cylinder head are available which can be used in conjunction with Speedwell Supertone exhaust systems to give greatly improved performance. These products are described in separate leaflets as well as below.



Sport Kit

Austin A.55 and A.60 Farina Wolseley 15/60 and Morris Oxford V and VI Farina, Wolseley 1500

The Sport Kit is designed to give a useful performance increase with economy both of first cost and fuel consumption. An additional SU carburettor type HS2 is supplied together with the parts necessary to make up a twin pair with the car's existing carburettor. Speedwell valve springs raise the RPM limitations and a Supertone exhaust minimises back-pressure losses. The complicated accelerator arrangement on the Farina cars is replaced by a simple cable-operating pedal.



Contents

SU carburettor, Type HS2	Inlet manifolds
Valve springs	Balance pipe
Linkage parts	Fuel piping
Choke cables and control	Accelerator pedal
Throttle cable	Supertone silencer
Carburettor air bells	Molyslip
Gaskets	Nuts, bolts, badge, etc.

Performance data

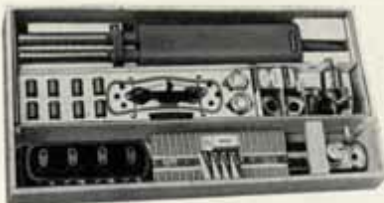
For Austin A.60 Farina

Maximum speed	0-50 mph	0-60 mph
83 mph	12.4 secs	18.6 secs
Approximate fuel consumption	24 mpg	

● 12 Months Guarantee ●

P.T.O. ▶

Speedwell engine kits are complete sets of Speedwell components specially selected to give a specific performance improvement economically and with reliability. The BMC Cooper-Mini unit is already a highly developed engine but it also has a reserve of mechanical strength making it ideal for further tuning. Speedwell have produced two kits, the "GT" and "Clubman", the latter representing the highest degree of tune recommended for road-going use. The large capacity 1152 cc conversion, available only as a complete engine, is described in a separate leaflet and racing engines and components are described in the "Competition" section. With all Speedwell kits there are no exchange parts to be returned. All the original equipment is retained so that the conversion can easily be changed over to a new car.



GT Kit

The main component of this kit is the Speedwell Light-Alloy Cylinder head, Clubman type. This has large inlet valves, efficient porting and a compression ratio of 11 to 1. Speedwell double valve springs permit up to 7000 rpm to be reached and the well known twin tailpipe Supertone silencer provides the most efficient exhaust operating conditions.

Performance Data

Maximum speed	0-50	0-60 mph
90 mph	9.7 secs	15.0 secs
Approx. fuel consumption	35 mpg.	

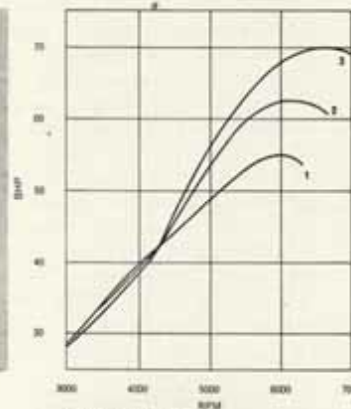
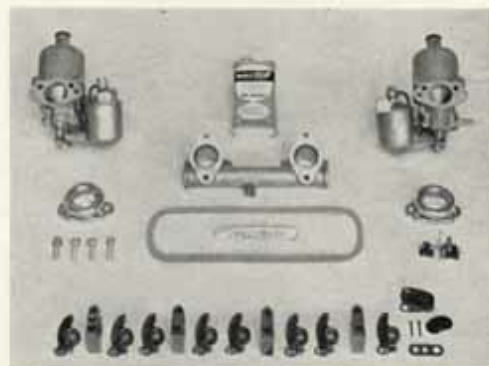
Contents

Alloy cylinder head, Type C	Valve Guides (fitted)
Large inlet valves, KE.965	Exhaust valves KE.965
Double valve springs	Air bells
Plated rocker cover	Splash plate
Spark plugs	Supertone silencer
Nuts and bolts, Badge	Molyslip, Gaskets, etc.



Clubman Kit

These kits include the Clubman light alloy cylinder head together with all the other components of the "GT" Kit plus two more Speedwell power-producing components: A larger twin SU carburettor set to maintain breathing at higher RPM and the unique Speedwell rocker gear to give the effect of a high lift, longer overlap camshaft.



Additional Clubman Parts

- Twin 1½" H4 SU carburetors
- 1½" Air bells
- Linkages and choke parts
- Enlarged and polished inlet manifold
- Speedwell rocker gear set



Performance Data

Maximum speed	0-50 mph	0-60 mph
96 mph	8.0 secs	11.5 secs
Approx. fuel consumption	30 mpg.	

Order Reference

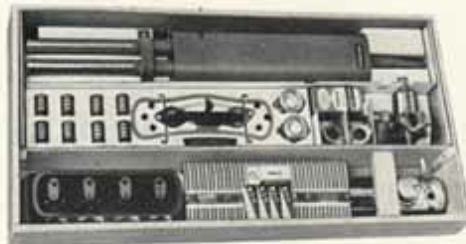
Packing Data

Description	Cat. No.	Size	Weight
GT Kit	GT.A1/C	39" x 19" x 7"	40 lbs.
Clubman Kit	GM.A1/C	100 x 48.2 x 17.8 cm	18 Kg.

COMPLETE ENGINE KITS

ENGINE KITS and PARTS

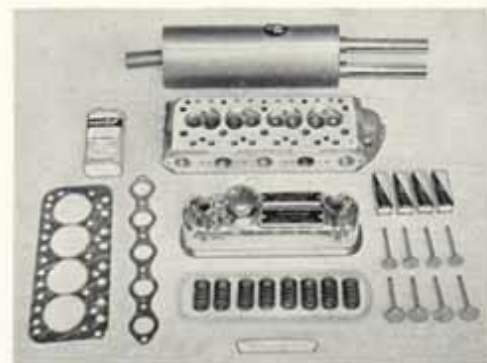
Speedwell Engine Kits are sets of components specially selected to give a required performance improvement economically and with complete reliability. Each specification is accurately determined by dynamometer testing and proved on the road and in competition events.



For the Sprite Mark II and Midget two kits are available, the "GT Kit" and the "Clubman Kit," the latter having a choice of Amal or Weber carburettors. The Clubman Kit represents the highest state of tune that can be conveniently used on the road. Further tuning for racing only is described in the competition section.

GT Kit

The GT Kit obtains its performance from the use of the Speedwell Light Alloy Cylinder Head, Clubman Type. This has large inlet valves (1.25"), flow-shaped combustion chambers, 11 to 1 compression ratio and efficient porting.

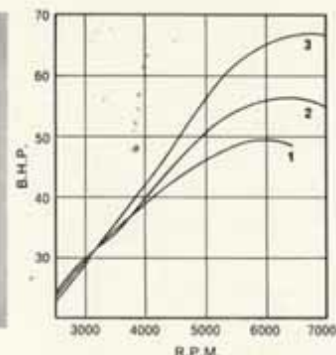


Contents

- Alloy Cylinder Head—Type C
- Large Inlet Valves, KE 965
- Exhaust Valves, KE 965
- Double Valve Springs
- Air Belts
- Sparking Plugs
- Badge
- Gasket Set
- Nuts, Bolts, etc.
- Supertone Silencer
- Plated Rocker Cover
- Gasket Set

Performance Data

Max. speed 0-50 0-60 m.p.h.
89 m.p.h. 11.0 16.3 secs.
Approx. fuel consumption—31m.p.h.



Additional Clubman Parts

- Camshaft CS2
- Amal inlet manifolds or, Weber inlet manifold
- Rocker Gear Set
- Twin Amal Carbs or, Weber carburettor type DCOE
- 'O' rings, bolts, etc.

- 1 950 cc BMC SPRITE Mk II
- 2 WITH SPEEDWELL GT-KIT
- 3 WITH SPEEDWELL CLUBMAN KIT

Clubman Kits

These consist of Alloy Cylinder Head and all components already described in the GT Kit plus a sports-racing camshaft (CS2), a set of special rocker gear giving higher valve-lift with higher RPM and a highly efficient carburettor and manifold set (Amal or Weber as preferred). A full-flow three-branch exhaust manifold is recommended for use with these kits.



Performance Data

In this instance figures are quoted for Kit CM A5/11A.

Max. speed—95 m.p.h.
0-50 m.p.h. 9.4 secs.
0-60 m.p.h. 14.0 secs.

Approx. fuel consumption,
28 m.p.g.

Order Reference

Packing Data

Sprite or Midget	Cat. No.	Size	Weight
GT Kit	GT.A5/2	30" x 19" x 7"	40 lb.
Clubman Kit, Amal	CM.A5/IIA	100 x 48.2 x 17.8 cm.	18 kg.
Clubman Kit, Weber	CM.A5/IIW		

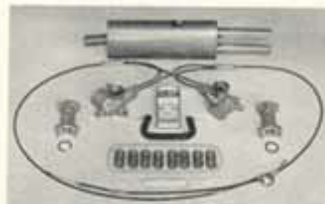
When using these kits for advanced conversions of 'A' type engines in vehicles other than Sprites please state vehicle so that the correct silencer can be supplied. State whether 950 cc or 1100 cc engine.

COMPLETE ENGINE KITS

ENGINE KITS and PARTS

For the Sprite Mark I Speedwell offer two moderately priced kits designed to give useful power increases throughout the RPM range. The performance improvement is sufficient for most Sprite owners whose cars are in daily road use. For further tuning it is necessary to fit Speedwell flat-top solid skirt pistons. All engine equipment for the Sprite Mark II can then be applied. For details, see the Speedwell leaflet on the Sprite Mark II, bearing in mind that the Mark I car will give higher performance due to its lower weight and better aerodynamic shape.

Speedwell Engine Kits are complete sets of components, developed by extensive dynamometer and road testing to give a specific performance improvement. Complete in every detail, they include comprehensive instructions to enable the enthusiast to fit the equipment himself or have it fitted by any garage. There are no "exchange" components to be returned and the original parts are retained, enabling the conversion to be easily transferred to a new car. The fitting of a Speedwell exhaust manifold in conjunction with these kits is recommended.



Amal Sport Kit

This kit obtains its power increase from the use of the remarkable Amal carburettor. A twin pair of these are used in conjunction with Speedwell heavy single valve springs to permit the use of 6500 RPM. A Supertone exhaust silencer improves the exhaust operating conditions.

Contents

- Twin Amal carburetors
- Cables, couplings & choke control
- Supertone silencer
- Fuel piping
- Nuts, bolts, "O" rings, etc.
- Inlet manifolds
- Balance pipe
- Valve springs
- Moly slip
- Gaskets & Badge

Performance Data

Maximum speed	0 - 50 mph	0 - 60 mph
	84 mph	12.1 secs
		18.7 secs
Approximate fuel consumption	30 mpg	

GT KITS

This kit includes the Speedwell light alloy cylinder head, Type 1GT. This has a compact and efficient combustion chamber giving 10.5 to 1 compression ratio, efficient porting and a valve size giving exceptional torque over the most used part of the RPM range. Speedwell air bells—aerodynamic air entries—replace the cleaners on the existing H1 SU carburetors. GT kits are also available with 1½" SU or Amal carburetors.



Contents

- Alloy head, Type 1 GT
- Valve springs
- Inlet valves, EN 52
- Air bells
- Sparking plugs
- Gasket set
- Valve guides (fitted)
- Exhaust valves, KE 965
- Supertone silencer
- Plated rocker cover
- Moly slip
- Nuts, bolts and badge

Performance Data

Maximum speed	0 - 50 mph	0 - 60 mph
	86 mph	11.8 secs
		18.1 secs
Approximate fuel consumption	33 mpg	

NOTE: This outperforms the 950cc Sprite Mark II

GT Kit with 1½" SU Carburettor—Type HS2

With the Speedwell alloy head fitted, performance can be further improved by fitting larger size SU carburetors, Type HS2. The installation includes efficient manifolds and fits directly in place of the original H1 carburetors.



Contents

- Complete GT Kit plus
- Twin HS2 SU carburetors*
- Choke cable
- Linkages
- Inlet manifolds
- Balance pipe

Performance Data

Maximum speed	0 - 50 mph	0 - 60 mph
	88 mph	11.5 secs
		17.0 secs
Approximate fuel consumption	31 mpg	

GT Kit with Amal Carburetors

Combining the power-producing qualities of the Speedwell alloy head and the Amal carburettor, this kit makes the Sprite Mark I a real enthusiasts car. Remarkable acceleration combined with reliability.



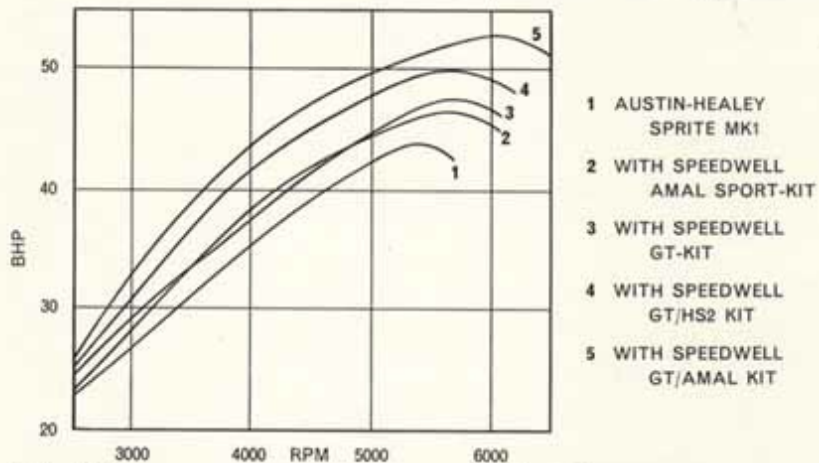
Contents

- Twin pair Amal carburetors
- Cables
- Choke control
- Inlet manifolds
- Balance pipe

Performance Data

Maximum speed	0 - 50 mph	0 - 60 mph
	90 mph	11.0 secs
		16.2 secs
Approximate fuel consumption	28 mpg	

NOTE: This outperforms the 1100 cc Sprite Mark II



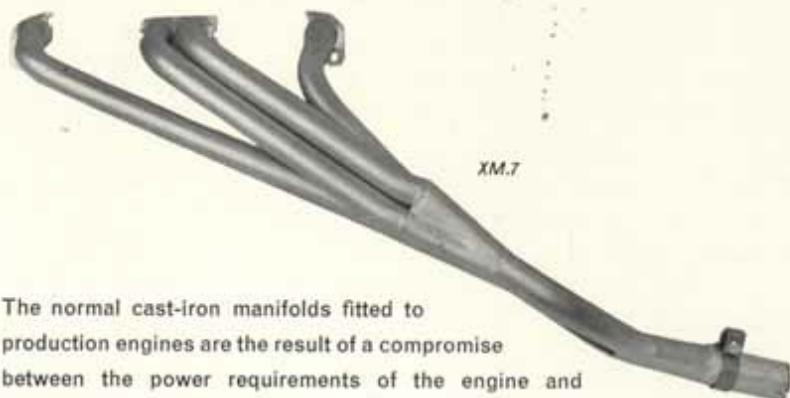
Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Amal Sports Kit	SA.5/A	36" x 12" x 5" (90 x 30 x 12.7cm)	20 lbs. 9 kg
GT Kit	GT.A5	39" x 19" x 7" (10 x 48.2 x 17.8cm)	40 lbs. 18 kg
GT Kit with HS2 carbs.	GT.A5/HS2		
GT Kit with Amals	GT.A5/A		

EXHAUST MANIFOLDS

EXHAUST SYSTEMS



XM.7

The normal cast-iron manifolds fitted to production engines are the result of a compromise between the power requirements of the engine and production economy.

Racing experience has shown that remarkable power gain can be obtained from exhaust system modifications. A great deal of research by Speedwell Engineers in the application of these principles for road use has shown several interesting facts.

Firstly the exhaust system must be cleared of everything which would interfere with its resonance — sharp corners, roughness, bad joints etc., anything that would impair the free flow of the steady gas stream. Tubular steel manifolds are the obvious choice because of good internal finish and the ease of manufacturing a system having long gentle curves.

It is seldom that the largest pipe diameter is the most efficient, in fact dynamometer test proves that in many cases it can be as small as 1.125"

Coupling of the individual pipes can, however be a critical matter. Normal principle is to join the pipes into even firing sets. e.g. 1 & 4 and 2 & 3 on four cylinder engines, 1, 2, 3, and 4, 5, 6, on a six cylinder engine. These are then joined into single pipes further down the system. The positions of the pairing can only be determined by experiments together with the arm length of the manifold and the dimension of the rest of the exhaust system. Manufactured of the highest quality steel tubing each manifold is assembled and checked on accurate jigs to ensure easy fitting.



XM.5

● **12 Months Guarantee** ●

P.T.O. ▶

For universal application with different carburation layouts, speedwell exhaust manifolds do not incorporate integral inlet manifolds. Speedwell tubular exhaust manifolds will always show an improvement in performance or economy, especially in conjunction with the Supertone Silencers.

With advanced conversions such as the Speedwell Clubman Range they become an essential part of the complete Engine Conversion.



MX.1

Specification

Electrically welded steel tubing, steel flanges with tubes recessed and gas welded.

Order Reference

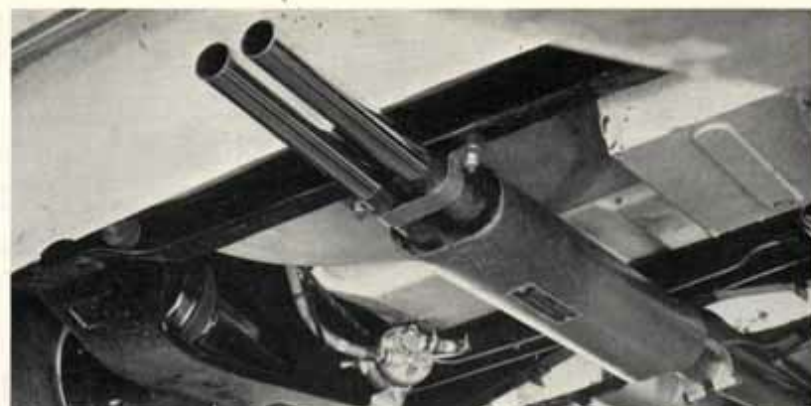
Packing Data

Vehicle Type	Cat. No.	Size	Weight
Austin Seven/Mini, etc.	XM.1	5" x 15" x 16" (13 x 38 x 41 cm)	3 lb. (1.36 kg)
Austin & Mini Cooper	XM.1/c		
Austin A.35, A.40 & A.40 Mk. II	XM.2	8" x 21" x 19" (21 x 54 x 49 cm)	4 lb. (1.82kg)
Austin A.55/A.60/ Wolseley 15/60 etc.	XM.3	5" x 20" x 17" (13 x 51 x 44 cm)	4½ lb. (2.1 kg)
Austin Healey Sprite & M.G. Midget	XM.5	5" x 17" x 21" (13 x 44 x 54 cm)	4 lb. (1.82 kg)
Ford Anglia 105E (not LHD)	XM.7	7" x 38" x 19" (18 x 97 x 49 cm)	5 lb. (2.6 kg)
Classic	XM.9		
M.G.A. all types	XM.10	11" x 29" x 22" (28 x 74 x 56 cm)	6 lb. (2.72 kg)
Morris/Austin 1100, etc.	XM.11		
Morris 1000	XM.15	8" x 21" x 19" (21 x 54 x 49 cm)	4 lb. (1.82 kg)
Riley 1.5	XM.20	10" x 23" x 16" (26 x 59 x 41 cm)	5 lb. (2.6 kg)
Wolseley 1500	XM.20	" " " " " "	" "

● **12 Months Guarantee** ●

Speedwell Performance Conversions Ltd., London, England

SUPERTONE 85 SILENCER



Order Reference XS85.1 fitted to Mini.

Vehicle Type	Cat. No.	Remarks	Carton No.
Austin/Morris 850 Mini	XS85.1		1
Austin/Morris 850 Mini Traveller & Van	XS85.1/TF		1
Austin/Morris Cooper and "S"	XS85.1 C	With extra silencer	1
Austin/Morris/MG.1100 (Innocenti IM3)	XS85.11	With tail pipe*	1
Austin A.35	XS85.4	With Pipe	2
Austin A.40 Farina (and Innocenti)	XS85.2	" "	2
Austin A.40 Mk. II (and Innocenti)	XS85.2/II	" "	2
Austin A.55/Wolseley 15.60 Oxford V	XS85.3	" "	2
Austin A.60/Wolseley 16.60 Oxford VI	XS85.3/II	" "	2
Austin Healey Sprite I and II, Midget	XS85.5		1
Fiat 600D	XS85.40	With pipe	2
Fiat 1500	XS85.45	Available May '64	
Ford Anglia 105E	XS85.7	With pipe	1
Ford Cortina (1200 and 1500 cc)	XS85.8	Available May '64	
Ford Classic/Capri (1340 & 1500 cc)	XS85.9	Tailpipes incorporated	None
MGA All Types	XS85.10		1
MGB	XS85.10/1		1
Morris 1000 (948 and 1098 cc)	XS85.15	With pipe	1
Peugeot 403	XS85.80	Available May '64	
Peugeot 404	XS85.81	" "	
Renault Dauphine	XS85.30	With pipe "	2
Renault Gordini	XS85.30/1	" "	2
Renault R.8	XS85.35	Available May '64	
Riley Elf/Wolseley Hornet	XS85.1/E		
Riley 1.5	XS85.20	With pipe	2
Saab 93 and 96	XS85.60		1
Simca 1000	XS85.65	Available May '64	
Simca 1300 and 1500	XS85.67	" "	
Sunbeam Alpine Mk. I	XS85.22	With pipe "	1
Sunbeam Alpine Mk. II	XS85.22/II	" "	1
Sunbeam Alpine Mk. III	XS85.22/III	" "	1
Triumph Herald (948 & 1200) pre '63	XS85.23		2
Triumph Herald (1200 & 1250) after '63	XS85.23/II		2
Triumph Vitesse	XS85.23/1		2
Triumph Spitfire—Sport	XS85.24	With tail pipe *	1
Triumph Spitfire—Sprint	XS85.24/SR	Available June '64	
Triumph Spitfire—Touring	XS85.24/T	" "	
Triumph TR.4	XS85.18	Available May '64	
Volvo PV 544 B.16 and B.18	XS85.70	Tailpipes incorporated	None
Volvo 122s Amazon	XS85.75	Available June '64	
Wolseley 1500	XS85.25	With pipe	2

Packed separately *

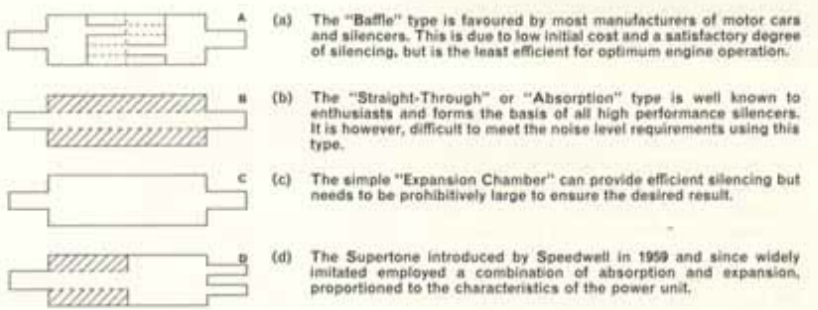
Packing Data

	Carton No. 1	Carton No. 2
Gross weight	10 lbs. approx. (4.5 kg)	10 lbs. approx. (4.5 kg)
Size	38" x 6" x 5" (96.5 x 15 x 12.5 cm)	25 x 7 1/2 x 9 (63.5 x 19 x 22.8 cm)
Display	Rack for 8 units	Rack for 8 units

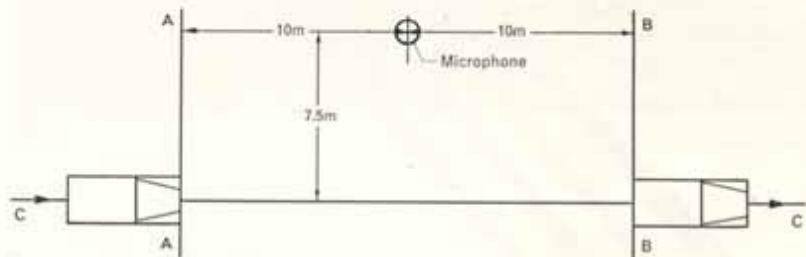


Noise and the Motorcar

Although many enthusiasts enjoy a raucous and sporty exhaust note on their cars, there is a growing feeling that this should be relegated to the race track, rather than on the increasingly congested highways. The ever growing number of vehicles on the road has created a serious problem which has made it necessary to consider legislation to limit the noise output of individual motor cars. The Wilson Committee appointed to investigate this in 1960 was able to recommend methods by which the exhaust sound level could be measured, and then determine which noise limits would be acceptable. These findings will with all probability become Law in the very near future. In many countries similar legislation is already in force. The difficulty of keeping within these exacting requirements without loss of engine efficiency has been the subject of extensive research. The **Supertone 85** with its megaphonic absorption system is the result. The diagram below shows the working principles of various silencer types in present day use.



To meet the stringent requirements of the impending legislation it has been found necessary to extend the **Supertone** principle in a new form. The new **Supertone 85** employs an advanced acoustic principle termed—*Megaphonic Absorption*—in which elements of absorption and expansion are progressively distributed within the silencer. This method gives the optimum combination of exhaust silencing, engine performance and fuel economy for a given silencer size. In keeping with the advanced design comes a high standard of construction—welded heavy gauge steel body—top grade glass wool acoustic filling plus a unique extra feature—corrosion free **Stainless Steel outlets**. This is the first time that stainless steel has been incorporated in a low priced car silencer.



Noise Level Test using Dawes Sound Measuring Equipment.

Noise Level Requirements

The **Supertone 85** is made to comply with British Standard 3425 which will be incorporated in the proposed legislation. This test is as follows:—

A car approaching line A is being driven at an RPM of three quarters that at which peak BHP is developed and in a gear giving a speed as near to 50 KPH (31 MPH) as possible. At line A the car is given full throttle and accelerated to line B. The measured noise level indicated during this passage of the car shall not exceed 85 DbA. Examples of each **Supertone 85** installation are tested under these conditions on standard engines and those fitted with Speedwell complete engine kits, unless otherwise indicated. **Supertone 85** Silencers fitted to customers' cars can be checked by Speedwell engineers if required.

Installation details

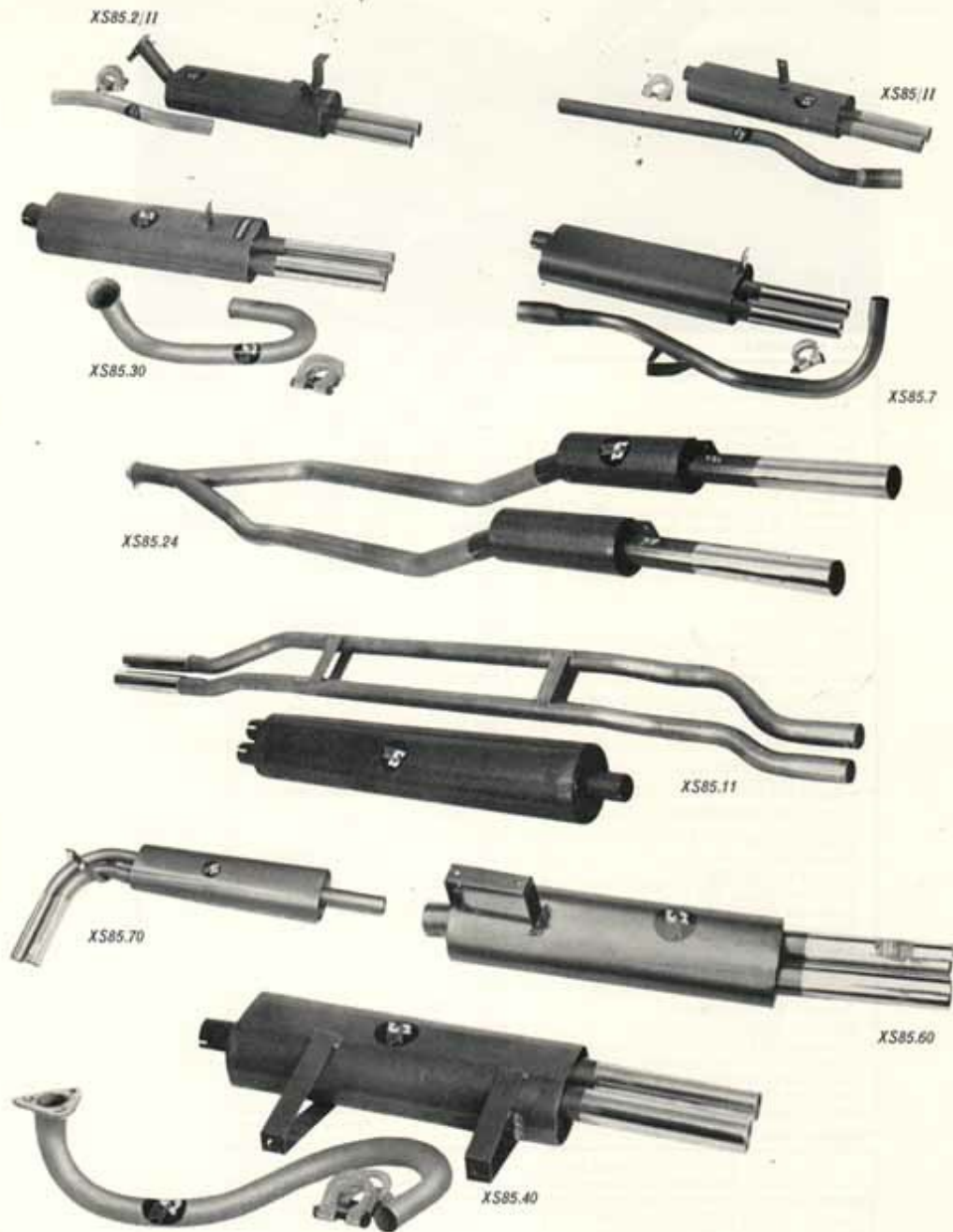
The **Supertone 85** replaces the original silencer and is normally fitted at the rear of the vehicle with its twin Stainless Steel pipes protruding. Suitable lengths of exhaust pipe, auxiliary silencers or small expansion chambers, are supplied where required to replace existing silencers fitted amidships. Where this is not possible complete tail pipe assemblies are provided.

In cases where an exceptionally quiet exhaust is required, the **Supertone 85** may be used in addition to the car's normal silencer giving a very subdued and pleasant note without loss of power. This is of great importance to the night rally driver.

For use on race tracks only, where the noise restrictions do not apply, special racing exhaust systems will be available particulars of which can be obtained on application.

● 12 Months Guarantee ●

*Patent applied for



● 12 Months Guarantee ●

P.T.O. ▶

CYLINDER BLOCKS AND PISTONS

The pistons fitted to touring car engines are designed to give moderate compression ratios in conjunction with normal cylinder-heads and to operate silently with minimum oil-consumption over the range of engine revolutions used. In the more radical modified and racing engines the requirements differ considerably.

Strength is the first requirement in order to withstand the increased gas-pressure loadings of high compression-ratios and the acceleration loading of high R.P.M.

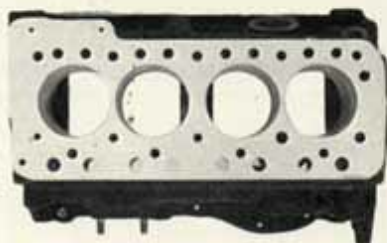
For example, in a tuned BMC 'A' type engine running to 7,000 R.P.M. and having a compression-ratio of 11 : 1, the peak total thrust on the piston crown is approximately 2.2 tons and the decelerating force on the piston as it changes direction at top-dead-centre is approximately 2,600 g meaning that a 10 ounce piston appears to weigh about three-quarters of a ton.

To meet this requirement materials of the highest quality are employed and the split-skirt design frequently used in touring engines is replaced by the solid-skirt or "pot" type piston having much greater rigidity. Additional strength has to be obtained without substantial increase in weight otherwise the loadings on connecting rods, crankshaft and bearings will be increased, possibly to the point of causing failure.

Exact design requirements of this kind are fully met in Speedwell special pistons and in addition a flat-top crown shape is provided to raise the compression ratio. Pistons of this type have been used in racing editions of the BMC 'A' series engine running at up to 8,000 R.P.M. and using compression ratios up to 13 : 1 without failures of any kind. Flat-top racing pistons are available in standard size for the BMC 950 cc A-series engine and also in 40 and 60 thousandth oversize. The latter increase the capacity to the class limit of just under 1,000 ccs.

INCREASING ENGINE CAPACITY

A very useful method of raising engine performance is to increase engine capacity. Apart from increased maximum power, this method gives large increases in torque which are very difficult to obtain in any other way. Speedwell special pistons enable all the BMC 'A' and 'ADO' series engines to be increased by up to 15% in capacity. The necessary machining operation on the block, which consists of moving the axes of the bores, boring oversize and inserting a thin-wall stepped liner to guard against casting porosity, is best



entrusted to the Speedwell Service Centre. Some of the outstanding results obtainable with these big-capacity blocks are described in other leaflets.

AVAILABLE ENGINE CAPACITIES

Power Unit	Capacity cc's	
	Standard	Speedwell
850 Mini (ADO 15)	848	962
950 "A" Type	948	1082
1000 Mini-Cooper (ADO 50)	994	1152
1100 "A" & Transverse	1098	1182

The 962 pistons for the 850 Mini unit are of the touring type as the 850 unit is not recommended for high degrees of conversion. Observing R.P.M. limits of 6,000 sustained and 6,500 momentary the 962 engine is entirely reliable and gives a very pleasant road performance with exception mid-range torque.

The 1182 engines require a change of connecting-rod in addition to pistons and block.

All enlarged capacity blocks require the use of a special Speedwell head gasket, see relevant leaflet.

SPECIFICATION

Piston Detail	948/997 "A"	1082/1182	962 Mini
Materials	Y-type Alloy	Y-type Alloy	Low-ex Alloy
Skirt type	Solid	Solid	Split
Crown Shape	Flat	Flat	Flat/recessed
Compression Rings	2 x .062"	2 x 1.5 mm	2 x .093"
Oil-control Rings	2 x .075"	1 x 4 mm	2 x .150"
Gudgeon Pin	3/8" Clamp	3/8" Clamp	3/8" Clamp
Compression Ratio	9.5 plus	10.5 plus	9.5 plus

Order Reference

Description		Cat. No.
Piston "A" type Flat top—solid skirt	948 cc Std.	CY.10
Piston "A" type " " " "	978 cc +.040"	CY.10/40
Piston "A" type " " " "	994 cc +.060"	CY.10/60
Piston "A" type and 998 cc Transverse	Large Capacity 1082 cc	CY.15
Piston Cooper-Mini	" " 1152 cc	CY.20
" " " " Group II	" " 997 cc	CY.21
Piston 1100 "A" & ADO 16	" " 1182 cc	CY.22
Piston 850 Mini	" " 962 cc	CY.24
Piston "B" type HRG Large pin	" " 1622 cc	CY.40
Block "A" type	" " 1082 cc	CY.50
Block Cooper-Mini	" " 1152 cc	CY.53
Block 1100 "A" & ADO 16	" " 1182 cc	CY.55
Block 850 Mini	" " 962 cc	CY.58
Head gasket for large bores "A" & Mini		CHP.6
Connecting rods (balanced) for 1182 cc engines (see Text)		CY.75

Packing Data

Pistons	2 3/8" (70 mm) dia. approx. x 2 3/8" (70 mm)	Weight 12 ozs (350 grms.)
Blocks (A)	10" x 10" x 15" (25 cm x 25 cm x 65 cm)	Weight 63 lbs 29 kg

LIGHT ALLOY CYLINDER HEADS

ENGINE KITS and PARTS

SPECIFICATION

Material—Cast high-strength heat treated Si-Cu-Al Light Alloy.
 Pressure tested and radiographed.
 Fits BMC 'A' Series and Mini engines.
 Accepts all BMC standard fittings, all relevant BMC and Speedwell carburettor layouts.
 Temperature bulb and adaptor (for Speedwell instruments).
 Removable end plate.
 Austenitic iron valve-seat inserts shrunk-in.
 Cast iron valve guides shrunk in and located by circlips.
 Valve seats cut by precision machine obviating lapping-in.
 Inlet ports machined and hand polished throughout.
 Positive inlet manifold location by spigot or dowel.

	GT	Clubman
Combustion Chamber	Full machined High turbulence form	3D Pantograph- milled flow-shape
Valves	1.1" Inlet 1.0" Exhaust	1.25" Inlet 1.0" Exhaust
Recommended Springs	Speedwell Single	Speedwell Double
Compression ratio (Normal gasket Type H)	10.5:1	11:1
Compression ratio (Gasket Type L)	9:1	9.5:1
Required pistons	Standard concave top	Flat top
Plug reach	3/4"	1/2"
Plug type	K.L.G.—FE.100 Champion N.4	Champion L5
Weight	12 lbs. (5.5 kg)	12 lbs. (5.5 kg)
Dimensions	17 1/2" x 3" x 5 1/2" 445 x 76 x 140 mm	17 1/2" x 3" x 5 1/2" 445 x 76 x 140 mm

Order Reference:

Description	Cat. No.	Remarks
GT alloy cylinder head c/w valves springs	CH.100	For Mk. I 'A' engines
Clubman alloy cylinder head c/w valves springs	CH.200	For Mk. II 'A' engines
GT alloy head with guides only	CH.10	
Clubman alloy head with guides only ..	CH.20	
Cylinder head gasket—H	CHP.1	
Cylinder head gasket—L	CHP.2	
Complete alloy head gasket set—H ..	CHP.3	
Complete alloy head gasket set—L ..	CHP.4	

SPEEDWELL PERFORMANCE CONVERSIONS LTD., London, England

● 12 Months Guarantee ●



The Speedwell Alloy Cylinder Head is a major advance in conversion technique. Compared with the older method of modifying cast-iron heads it offers better engineering, better performance and better value for money.

Briefly, the excellent thermal properties of aluminium permit a very high compression ratio to be used which, together with porting of efficient gas flow properties, results in an exceptional improvement in power output. In a test on a Sprite engine on which only the cylinder head was changed, a power output increase of 20 per cent was obtained. The Speedwell head is completely interchangeable with the original BMC head for 'A' series and Mini engines and can take all the standard fittings and manifolds. As the purchaser retains the original head, the Speedwell conversion can be conveniently transferred when a new car is bought.

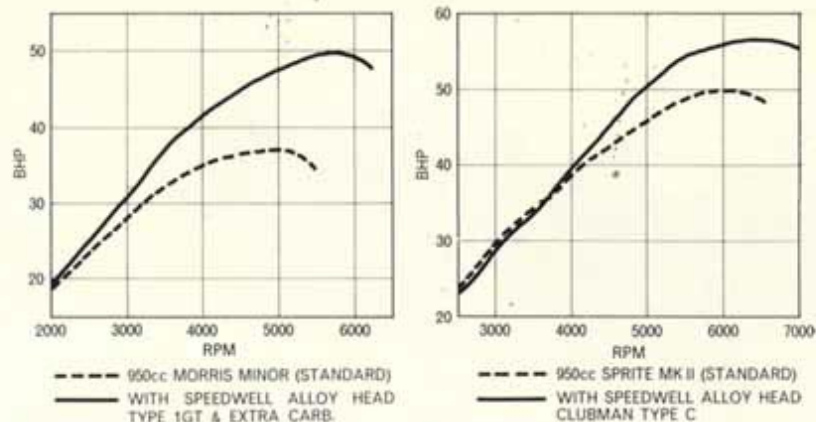
Internally the Speedwell light alloy cylinder head is a completely new design. The metal sections are, on average, twice as thick as those of the cast-iron version, and in critical places such as the combustion chamber "skulls" and headface, three times as thick. This results in the great strength and rigidity necessary for a successful alloy head free from distortion troubles and at the same time gives a vastly improved heat-path away from the vital areas of the combustion chambers.

The valve seats are of hard-wearing Austenitic iron shrunk into the combustion chamber before machining so that the transition from the seat to head is included in the smooth gas-flow shape around the valves. The inlet porting is partly machined and then hand-finished to the same high standard as the well-known Speedwell modified iron heads. The port form is generally circular, this being the best for obtaining high flow in a port of given area and thereby combining performance with flexibility.

Openings on the manifold face will match up with Speedwell twin-carburettor layouts of all types, the carburettor sets of the Austin-Healey Sprite Marks I and II and the Mini-Cooper. Though the single carburettor sets of the Mini, Morris Minor 1000 and A.40 Mark II will also fit, for best results twin carburettors are recommended.

● 12 Months Guarantee ●

P.T.O. ▶



PERFORMANCE IMPROVEMENT

The performance improvement is obtained in the following manner. The greatly improved gas flow characteristics of the ports and combustion chamber area give an increase in the charge of mixture taken in by the engine on each induction stroke. The operations necessary to obtain this improvement do not lead themselves to mass production and consequently cannot be used by the motor manufacturers.

The high conductivity of aluminium and the massive metal sections result in cool running combustion chambers. The last part of the mixture to burn is kept cooled and the tendency to detonate is reduced. This in turn permits higher compression ratios to be used and increases the thermal efficiency of the engine so that more power is obtained from a given quantity of fuel.

Combustion is also improved by the small dimensions of the combustion chamber and the short flame path. Better combustion and better cooling of the sparking plug combine to make the engine far less critical to the grade of sparking plug employed. The original plugs from the iron head are often suitable for use in the Speedwell head despite the more exacting requirements of higher performance. Thus the engine shows an all round improvement retaining full flexibility.

To cover the requirements of different engines, two models are produced.

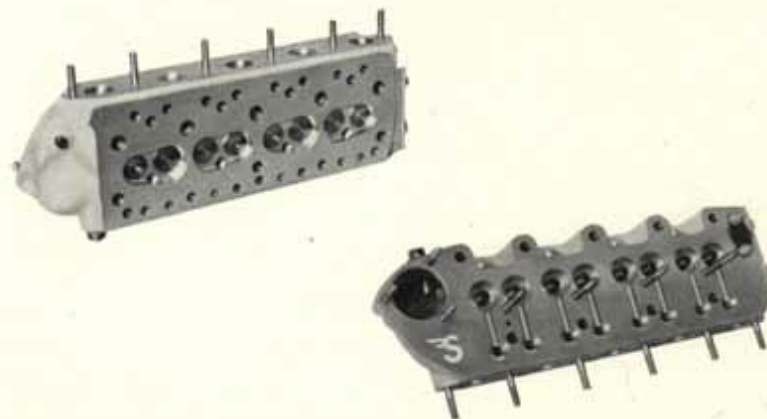
THE SPEEDWELL GT

As its name implies, this head is designed for the fast touring car, giving power gains throughout the speed range without loss of flexibility and fuel economy. In fact, tractability at low speed is considerably improved making everyday driving a greater pleasure. Applicable to both BMC 'A' Type and 850 c.c. Mini units the Speedwell GT head has optimum valve dimensions for all-round performance, matched to gas flowed and polished inlet ports feeding a compact combustion chamber with high turbulence. Compression ratio is 10.5:1 with standard concave pistons.

● 12 Months Guarantee ●

THE SPEEDWELL CLUBMAN

This head is designed for use on the Cooper Mini, Sprite Mark II, MG Midget, 1100 and more highly tuned versions of the 'A' type engine. Capable of outputs exceeding 70 BHP in road-going form this model vividly demonstrates the advantage of light alloy. Ideal for the Club racing competitor whose vehicle also serves as everyday transport. The Speedwell Clubman design includes large valves for maximum power and a flow-shaped combustion chamber produced by three dimensional pantographic milling. Compression ratio is 11:1 in conjunction with flat topped pistons. The GT Head can be modified to Clubman pattern if required.



ALTERNATIVE COMPRESSION RATIOS

Alloy heads permit the use of unusually high compression ratios. The standard ratios of 10.5 and 11:1 are intended for 100 octane petrol.

A special thick gasket is available reducing the ratio to approximately 9 for low grade fuel. Higher ratios up to 13.1 can be obtained by those wishing to experiment by machining the head face which is over $\frac{1}{8}$ " thick and adequately strong for such treatment. Such operations should of course, only be attempted by those conversant with racing tuning. The Speedwell alloy head is particularly suitable for use with supercharging and special low compression editions for use with high boost pressures can be supplied at slight additional cost.

Alternatively, customers can lower the mechanical compression ratio by using concave topped pistons in conjunction with the Clubman pattern head or use the thick head gasket.

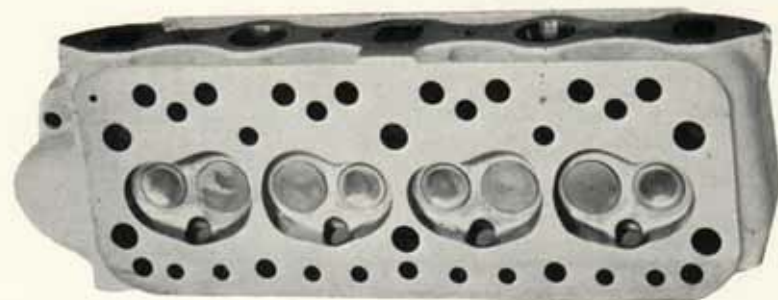
SERVICE

When the valves and seats require attention they can be ground-in and re-cut in the conventional manner until the seat insert diameter is reached. At this point a normal cast iron head would have to be seat-inserted. The Speedwell Light Alloy head should be returned to the factory for re-seating. If this should be inconvenient due to distance, replacement seatings and instructions to enable any high class cylinder head reconditioner to tackle the job will be available.

● 12 Months Guarantee ●

CYLINDER HEADS

ENGINE KITS and PARTS



Stage I

A new BMC cast-iron cylinder head as used on the Sprite Mark II or Cooper-Mini, carefully ground to remove casting irregularities, the ports modified to an improved shape developed by gas-flow testing and internally polished to a smooth finish. The head face is surface-ground to give a compression ratio raised by 0.5 or as required by customer. Available for outright purchase or the work carried out on the customer's own cylinder head. (See Price list)

Stage II

A new BMC cast-iron cylinder head as used on the Cooper-Mini, modified to give the best performance obtainable without altering valve sizes. Modifications complying with Group II regulations (Improved touring cars) of Appendix J, FIA Rules. The combustion chambers are re-profiled by three-dimensional pantographic milling to a form developed by gas-flow testing. The ports are opened to optimum form and dimensions and the surfaces polished smooth. The compression ratio is raised to 11 to 1 in conjunction with flat-topped pistons. Lower ratios for road use are supplied on request. Available for outright purchase or work carried out on customer's own cylinder head. (See Price list)

Specification	Stage IA	IIA
Valve Size — inlet	1.16"	1.16"
Valve Size — exhaust	1.0"	1.0"
Inlet port at manifold face	1½" Dia.	1½" Dia.
CR with flat-topped pistons	9.5	11
CR optional alternative	Higher	Lower
Thermometer bulb pocket	For Speedwell Gauges	

Order Reference

Packing Data

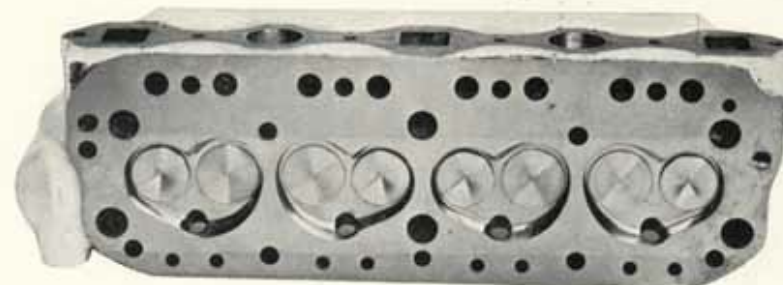
Description	Cat. No.	Size	Weight
Stage I cyl. head with guides only	CH.40	17" x 5½" x 3"	25lbs.
Stage II cyl. head with guides only	CH.40/II	(44 x 14 x 7.6 cm)	(11.5 kg)

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

CYLINDER HEADS

ENGINE KITS and PARTS



Stage I

A new BMC cast-iron cylinder head as used on MG Magnette IV and Riley 4/72, carefully ground to remove casting irregularities, the ports modified to an improved shape developed by gas-flow testing and internally polished to a smooth finish. The head-face is surface-ground to give a compression ratio raised by 0.5 or as required by customer. Available for outright purchase or work carried out on customers own cylinder head. (See Price List).

Stage II

A new BMC cast-iron cylinder head as used on the MGB using large valves, ground to remove casting irregularities and polished throughout. Ports and combustion chambers finished to a gas-flow developed form realising the maximum power potential of this type of head. Specially recommended for use on 1622 cc or larger engines fitted with MGA pattern or similar camshafts. Available for outright purchase or work carried out on customers own MGB cylinder head. (See Price List).

Specifications	Stage IB	Stage IIB	
Valve size — Inlet	1½"	1.7½"	
" " Exhaust	1.375"	1.375"	
Compression ratios	1489 & 1588 c.c.	8.9	8.2*
	1622	9.6	8.8
	1622 MGA Mk II	10.4*	9.5
	1798 MGB	10.1*	9.3
CR with flat-top pistons	1489	9.8	8.9
	1588	10.3*	9.4
	1622	10.4*	9.5
CR with HRG flat-top pistons	1622	11.1*	10.0

* For special purposes only.

Order Reference

Packing Data

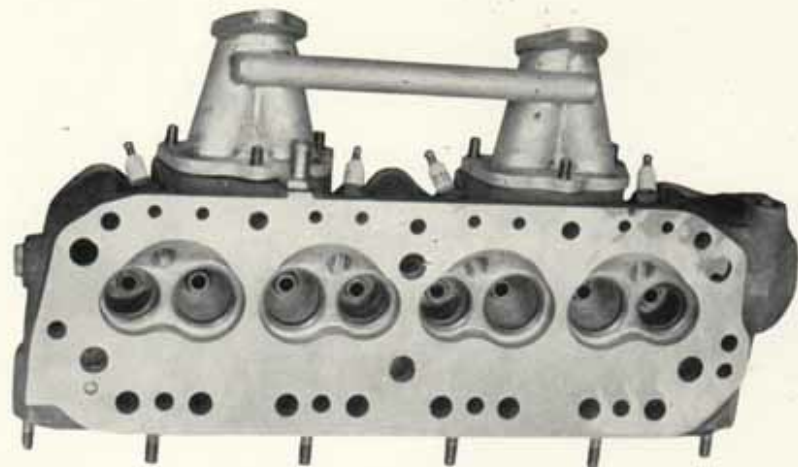
Description	Cat. No.	Size	Weight
Stage IB cyl. head with guides	CH.60	19½" x 6" x 3½"	36lbs.
Stage IIB cyl. head with guides	CH.60/II	49.5 x 15.2 x 8.9 cm	16.5 kg.

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd. London, England

HRG CROSSFLOW LIGHT-ALLOY HEAD

ENGINE KITS and PARTS



This soundly engineered light-alloy head fits B series engines as a direct replacement using all the standard valve-gear parts. The exhaust remains on the same side of the engine, utilising the existing cast-iron manifold and car exhaust. The carburettors are transferred to the other side of the engine, feeding four separate inlet ports via special manifolds. SU carburettors of 1½" or 1¾" may be used or alternatively a twin-double choke Weber installation giving the ultimate in power output from the B series engine.

Increases in power vary from 15% using 1½" SU carbs to 27% with the Weber installation. Over 110 BHP can be obtained from the 1800 cc engine.

Two models are available, Mk I for the 1500 cc engine and Mk II for 1588 and 1622cc.

Specification

Model	Mk I		Mk II	
Used on	1498 cc	1588 & 1622	1588 & 1622 MGA	1798 MGB
Valve size inlet	1½"	1½"	1½"	1½"
" " exhaust	1½"	1½"	1½"	1½"
Compression ratio	8.3	8.3	9.3	9.0
With special pistons	9.2	9.3	—	—
Racing pistons	10.	10.1	10.1	—

Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Mk I Head less valves	CH.70	19½" x 6" x 3½" (49.53 x 15.24 x 8.89cm)	18 lbs. (8 kg)
Mk I Head with valves	CH.700		
Mk II Head with valves	CH.700/II		

● **12 Months Guarantee**

● Speedwell Performance Conversions Ltd., London, England

To match the carburettor to the engine requirements, the following adjustments are available:

- (a) The needle: Several hundred different graduated profiles are available, identified by numbers and letters.
- (b) The piston spring: These are available in five different weights identified by coloured paint. A heavier spring has the general effect of enriching the mixture but may limit maximum power.
- (c) The Damper: Its effect can be varied by using different grades of oil between SAE 30 and SAE 10 or removing the dampers altogether.



Settings for most of the frequently used engine conversions are available from Speedwell and in all cases a commencing setting from which to experiment can be given.

For all high-performance applications the SU is used in twin pairs. In some cases, the BMC range for example, the original single SU carburettor can be retained and converted by substituting various parts to form one of a pair. This makes twin carburettor performance available at very low cost.

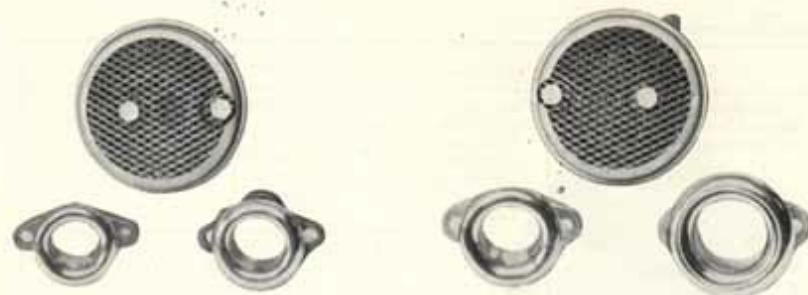
The increase in power to be obtained from fitting twin carburettors naturally varies widely from engine to engine but 20% can be taken as a typical figure. There is seldom any appreciable increase in maximum torque, the increased power being obtained at high RPM.

The two sizes of SU carburettor most frequently used are the HS2—1½ inch and the H4—1¼ inch. Which size is best for the various versions of BMC 'A' series, Mini and similar engines? Experience with twin-carburettor sets indicates that the smaller (1½") carburettor should not be used for engines required to give over 60 BHP and the larger (1¼") should not be used for engines of less than 55 BHP.

Manifolds perform the function of supporting the carburettors and connecting them to the inlet ports of the cylinder head. This apparently simple function includes a number of important points some of which are not fulfilled by certain of the proprietary manifolds. Most important from the performance point of view is the taper, curve and length of port used to match the carburettor diameter to the port. The method of locating the manifold to the head is also important, examples of dowels, spigots and the use of studs being included in the Speedwell manifold range. To improve the idle and stabilize the carburation at low throttle-openings all manifolds are provided with balance-pipes, the dimensions of which are determined by experiment.

The front of the SU carburettor takes the form of a flange to which air cleaners, etc., can be bolted. Most of the elaborate cleaner-silencer devices involve considerable loss of power but if an air-cleaner must be used a simple "pancake" type will minimise losses. Experience indicates that for main-road motoring in Great Britain air-cleaners are not necessary and make a negligible difference in bore wear over a 30,000 mile engine overhaul life.

In the absence of air-cleaners, best results can be obtained from the SU if a form of air-entry is fitted to the front flange. The most effective of such devices is the Speedwell "airbell" which is a simple aerodynamic entry tube improving the airflow without altering



carburation or "length effects" to any extent. In certain cases, gains of up to 5% in maximum power are obtained by fitting airbells. Long trumpets are not recommended as they frequently upset carburation and usually result in too long a port-length for maximum power.

Order Reference

Vehicle	Carburettor Details	Cat. No.	Remarks
Austin A.40 Mark II Morris Minor 1000 (from 1961) Morris 1100 Austin A.35 1100 c.c. Van	Additional carb. assembly SU 1½" HS2. Includes:— Rear carburettor HS2 Linkage set Twin choke cable Fuel-line parts	CA.200 CA.10 CA.11 CA.12 CA.13	Cable operated Van requires cable-operating accelerator pedal. See below
Austin Mini Morris Mini-Minor Riley Elf Wolseley Hornet Mini Van	Additional carb. assembly SU 1¼" HS2. Includes:— Right-hand carb. HS2 Parts for L.H. carb. Linkage set Twin choke cable Fuel-line parts	CA.210 CA.10 CA.9 CA.11 CA.12 CA.13	Cable operated. Choke converted to operation by twin cable
Austin A.55/A.60 Farina Morris Oxford V & VI Farina Wolseley 15/60 & 16/60	Additional carb. assembly SU 1½" HS2. Includes:— Rear carburettor HS2 Linkage set Twin choke cable Fuel-line parts	CA.220 CA.10 CA.14 CA.12 CA.13	Cable operated Cable operating accelerator pedal also required. See below
Wolseley 1500 Metropolitan	Twin carb. assembly SU 1½" HS2. Includes:— Rear carburettor HS2 Front carburettor HS2 Linkage set Twin choke cable Fuel-line parts	CA.230 CA.10 CA.20 CA.14 VA.12 CA.13	Cable operated Original carb. discarded Metropolitan also requires cable-operating accelerator pedal. See below
Austin A.35 Austin A.40	Twin carb. assembly SU 1¼" HS2. Includes:— Rear carburettor HS2 Front carburettor HS2 Linkage set Twin choke cable Fuel line parts Operating rod & bearing A.35/A.40 Rod bracket A.35 Rod bracket A.40	CA.240 CA.30 CA.20 CA.11 CA.12 CA.13 CA.15 CA.16 CA.17	A.35 and A.40 are lever operated and require operating rod, bracket and bearing. Alternatively, fit cable-operating accelerator pedal and use CA.250

WEBER CARBURETTOR SETS

Order Reference for Components

Description	Cat. No.	Remarks
Weber inlet manifold for 850 cc Mini	CA.501	1 required for CA.500
Weber inlet manifold 40 mm for 'A' Type engine	CA.502	1 required for CA.520
Weber inlet manifold 45 mm for 'A' Type engine	CA.503	
Weber inlet manifold 40 mm for HRG Head (Pair)	CA.506	1 required for CA.550
" " " 45 mm for MGB	CA.507	For CA.500
Air entry for Downdraught carburettor	CA.562	

Packing Data

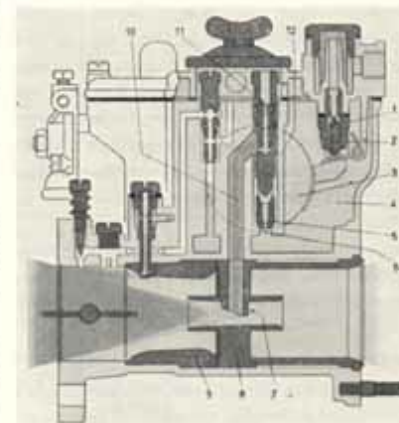
Description	Size	Weight
CA.500 etc.	8" x 6" x 5" (20.3 x 15.2 x 12.7 cm)	7 lbs. 3.1 kg
CA.501	9" x 7" x 4" (22.8 x 17.7 x 10 cm)	22 lbs. 1.1 kg
CA.562	4½" x 2½" x ½" (10.7 x 5.7 x .9 cm)	3 ozs. 85 grms

Virtually every successful racing engine today which uses carburettors is fitted with a Weber. Excellent design and high standard of manufacture have brought this carburettor to its present successful position and adoption by racing engine designers. Although not fitted as standard equipment on British cars, Weber carburettors are used in a number of Speedwell Engine Conversion Kits and may be adapted to several BMC engines.



The Weber carburettor is a fixed-jet instrument with butterfly throttle. Once above idling speed, the mixture fed to the engine at all combinations of throttle opening and RPM is controlled by a system of jets metering air and fuel. Although made in a large number of types, those used for high performance engines are of the double-choke form, that is, two separate carburettors combined in one body with a common float-chamber and linked throttles. This construction makes the Weber particularly suitable for installations having one carburettor choke for each inlet port. To suit various engine layouts, both downdraught and horizontal types are available.

The diagram shows a cross section of the 40 DCOE horizontal type. Fuel in the float chamber (4) is maintained at constant level by float and needle as shown. In response to engine suction, fuel flows up through the main jet (5) and mixes with air entering through the corrector jet (11) to form an emulsion which passes down to the spray nozzle (7). The main choke tube (9) and the auxiliary venturi (8) combine to provide the highest possible velocity past the spray nozzle, atomizing the fuel and forming the mixture. The main choke, auxiliary venturi, main jet, corrector and jet emulsion tube (12) are all adjustable to enable correct mixture to be obtained for a wide range of engine operating characteristics. For carburation at very small throttle-openings a similar air-corrected jet system feeds mixture to a number of small holes close to the edge of the nearly closed throttle butterfly. To assist pick-up on acceleration a built-in accelerator pump is provided which sprays into the main choke from a separate jet when the throttle is rapidly opened.

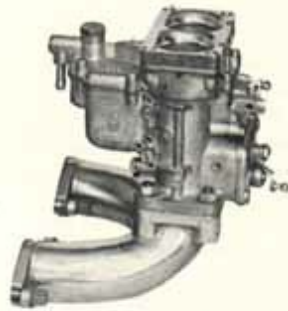


The main features of the Weber carburettor can be summarised as follows:—

- (i) Advanced design of the venturi-choke and air-correction system enables a larger size of carburettor and choke to be used with consequent advantage to maximum power.
- (ii) Provision of accelerator pump and progression system which enables large choke and carburettor sizes to be used without "flat spots".

- (iii) Balanced float chamber which surrounds main-jet system minimising the mixture fluctuating in carburation due to cornering-forces and acceleration.
- (iv) Neat installation resulting from the twin-choke design with common float chamber and butterfly eliminating fuel couplings and throttle connections.
- (v) Retention of tune. Once correctly set, the absence of linkages plus the fact that the main mixture control is effected entirely by jets and no moving parts, results in exceptional retention of tune.

The above remarks apply particularly to the horizontal types but also in lesser degree to the downdraught carburettors.



Manifolding

This is always of great importance in converted engines but particularly so in the case of the Weber. There are a number of reasons for this. Firstly, the weight and size of the twin-choke instrument presents certain problems of space and results in rather long manifolds, angled or curved. Secondly, the properties of the carburettor and manifold result in a need for efficient anti-vibration mounting. Thirdly, the flange size of the Weber is always considerably larger in diameter than the inlet port or the valves so that a taper losing area in the most efficient manner must be combined with the curving manifold. This is quite a difficult task which can only be approached by gas-flow methods and it is not surprising that some of the manifolds on the market for coupling Weber carburettors to converted engines are extraordinarily inefficient.

Settings

The most that can be required of any carburettor is that it can be set to give the correct mixture for any engine under all its various operating conditions with maximum volumetric efficiency. Even the finest instrument can not be expected to produce the desired results unless correctly set up. Self-evident though it may be, this simple fact is sometimes forgotten and lies behind almost every case of disappointing results with the Weber carburettor. When it is considered that the horizontal type contains nine variable jets and at least twelve other adjustable items it is obvious that the possibilities for imperfect setting are enormous! Initial setting-up to suit a particular engine is a job for the properly equipped expert and is almost impossible without dynamometer equipment. It is, however, quite possible for the enthusiast to make small changes to compensate for individual differences between engines or for minor specification changes by jetting for best road performance.

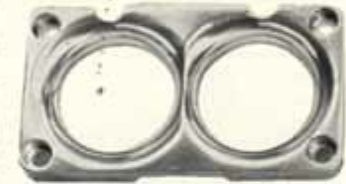
The best method is to use a Speedwell Weber Engine Kit in which the settings will be correct. Otherwise, by giving fullest particulars of the engine for which the carburettor is intended, Speedwell can supply starting settings which will be near correct and advise on the further tuning.

Applications

The smaller downdraught pattern is particularly suitable for use on the BMC 850 cc Mini series. A correctly set carburettor and manifold form the basis of the Speedwell Weber Sport Kit which gives

these models outstanding performance. The Horizontal type can be applied to all BMC "A" Series engines in Sprites, Austin A.35 and A.40, Morris Minor, etc. It is advisable to use the Weber only for the more advanced stages of conversion. For example, fitting a Weber carburettor as the only change to an otherwise standard Austin A.40 will not give very good results. Fitting the same carburettor in conjunction with a Speedwell cylinder head having large valve-sizes and efficient flow-properties, together with a sports-racing type camshaft will produce an engine capable of exploiting the advantages of the Weber to the full. This is seen in Speedwell Engine Kits where the Weber type DCOE is introduced in the "Clubman Kit" stage for the Sprite Mark II giving a 67 horsepower engine of exceptional performance.

Two Horizontal carburettors forming a Four-Choke installation can be fitted to the BMC "B" series engine when fitted with the HRG cross-flow head, giving the highest outputs of which this engine is capable.



CA.562

Order Reference for Weber Carburettor Assemblies

Vehicles	Carburettor Details	Cat. No.	Remarks
Austin/Morris and other 850 cc Mini Models	Downdraught Weber carb assembly includes:— 1 Weber carb 1 Linkage set 1 Fuel line kit	CA.500	
		CA.511	
		CA.531	
		CA.541	
Austin-Healey Sprite and Midget 950 cc 'A' Series Engined Specials	Horizontal Weber carb assembly includes:— 1 Weber carb 1 Linkage set 1 Fuel line kit	CA.520	Supplied with settings according to customer's engine specification. As near correct as possible but may require some slight adjustment
		CA.516	
		CA.532	
		CA.542	
BMC 'B' Series engines fitted with HRG Alloy head	Horizontal Weber carb assembly includes:— 2 Weber carbs 1 Linkage set 1 Fuel line kit	CA.550	
		CA.519	
		CA.523	
		CA.543	

Order Reference for Weber Carburettors only

Weber Type	Description	Cat. No.	Remarks
34 DAS	Small downdraught	CA.601	Supplied with settings according to customer's engine specification. As near correct as possible but may require some slight adjustment
36 DCZ	Small downdraught	CA.602	
40 DCZ	Downdraught	CA.603	
42 DCZ	Downdraught	CA.604	
40 DCM	Racing downdraught	CA.605	
40 DCOE 2	Horizontal	CA.606	
40 DCOE 8	Horizontal	CA.607	
45 DCOE 9	Horizontal	CA.608	
50 DCOE 3	Racing horizontal	CA.609	
58 DCO 3	Racing horizontal	CA.611	

AMAL CARBURETTOR SETS

The Amal carburettor, universally used on racing motorcycle engines, has long interested high-performance car enthusiasts and over the years many attempts have been made to adapt the Amal for car use. Only Speedwell have successfully overcome the problems involved to the extent that road-going cars can be so equipped and in fact some hundreds of Speedwell Amal carburetted cars are in daily use.

Looking at an Amal carburettor, the source of its power-producing qualities is easily seen. At full-bore its slide-type throttle disappears leaving only a slender control needle crossing an otherwise smooth, round, uninterrupted flow tube. There is no butterfly throttle to cause unwanted turbulence, no choke to restrict flow and no changes in cross-sectional area to upset the flow pattern.

A good example of the results obtainable from this remarkable carburettor is the Speedwell Amal Sport kit applied to the 850 c.c. BMC Mini. This increases maximum power from 34 BHP to 41.5 BHP, improving the 0 to 60 m.p.h. acceleration time from 26.5 to 17 seconds and raising the maximum speed from 72 to 82 m.p.h.; this without change to the cylinder head and at remarkably low cost.

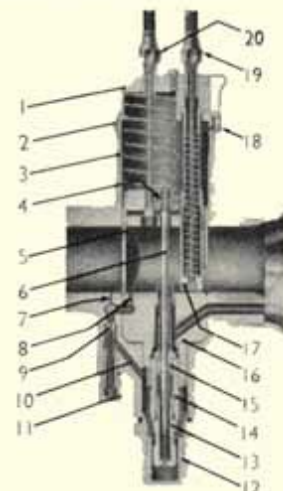
Operation of the Carburettor

As will be seen from the illustrations, the throttle takes the form of a hollow cylindrical slide crossing the main bore of the carburettor. When the throttle is closed, the slide is fully down, shutting off the main bore. To provide an idle or tick-over, a throttle-stop screw (30) can be adjusted to prevent the slide from quite closing. In this position, idle mixture is provided by the pilot outlet (7) controlled by the pilot jet (9) and the pilot air adjusting screw (29).

As the throttle is progressively opened, the front part of the throttle-slide, known as the cutaway, causes part of the engine suction to be applied to the main jet assembly. Fuel coming through the main jet and around the needle sprays into the main bore to provide a correct mixture up to about quarter throttle. Between about quarter and three-quarters throttle the suction over the main jet continues to increase but the fuel is now controlled by the tapered needle operating in its jet (15). Finally, at full-bore, the throttle-slide clears the main bore completely and the mixture is determined entirely by the main jet (13). This method of dividing

the phases of operation of the carburettor according to throttle position greatly facilitates tuning.

To enable the carburettor to deliver correct mixture at both high and low engine RPM with the throttle fully open, a compensating device consisting of a primary air choke (34) and bleed holes in the needle jet (33) is included. For starting from cold an air slide is provided, operating inside the throttle, which chokes down the main bore providing a very rich mixture under control of a dashboard lever.



● 12 Months Guarantee ●

P.T.O. ▶



Contrary to popular belief, the Amal is quite a simple carburettor for the enthusiast to install and tune. The essentials of a successful installation being as follows:—

- (1) Only Speedwell Amals should be used—they are specially adapted for car use and differ in important details from the motorcycle instrument.
- (2) Correct size of carburettor. Having no interchangeable choke tubes, the complete carburettor must be changed if it is found to be too large or too small. A range of sizes will work on any particular engine but only one will give best results. Long experience of car installations enables Speedwell to advise on the best size.
- (3) Correct manifolding. Speedwell manifolds combine all the necessary features for best operation including—size, match to cylinder head, balance pipe, tract length and vibration insulation.
- (4) Correct fuel supply. An electric low pressure pump delivering 2½ pounds per square inch will give best results.
- (5) Correct throttle control. The slide-type throttles are somewhat heavier in operation than conventional butterfly types. Leverage of the accelerator pedal frequently needs increasing to provide a pleasant pedal action. Detailed instructions are available from Speedwell for a number of models.
- (6) Settings can frequently be given by Speedwell for a particular car. In any case, starting settings from which to tune will be available. Alternatively, complete engine kits incorporating tuned Amal carburettors are available.
- (7) Detailed instructions on tuning—setting-up and synchronising twin Amal installations are provided with Speedwell carburettor sets and engine kits.

Amal carburettor throttles are cable controlled, twin pairs being joined by coupling boxes into a single cable which makes installation very simple. Some cars have rod mechanisms—these accelerator pedals can be replaced by a cable operating type. The air-slides or chokes are similarly connected and are cable operated by a lever-type control which can be mounted under the dash. Cold starting with Amal carburettors is exceptionally easy. At continuous high cruising speeds fuel consumption tends to be lower than with other types of carburettor but rather higher when driven continuously in town and at low throttle openings.

For racing only special twin and quadruple carburettor sets operating without float chambers are available. These are capable of the highest specific outputs obtainable from any form of carburetted engine and are particularly suitable for special racing fuels.

Order Reference for Amal Carb. Assemblies

Vehicle Type	Carburettor Details	Cat. No.	Remarks
Universal	Twin Amal carb. assembly includes:	CA.400	Give full details of Engine and other relevant information. Use of low pressure electric fuel pump recommended
	2 Amal carbs.	CA.421	
	1 Cable set & choke lever	CA.431	
	2 Metal 'O' Rings	CA.436	
	2 Rubber 'O' Rings	CA.441	
	1 Fuel line kit	CA.446	
Austin/Morris Mini and other 850 c.c. BMC Mini models	Twin Amal carb. assembly includes:	CA.410	Due to proximity of bulkhead it is essential to fit engine cones AC/2/A1 also heat shield
	2 Amal carbs.	CA.422	
	1 Cable set with choke lever	CA.431	
	2 Metal 'O' Rings	CA.437	
	2 Rubber 'O' Rings	CA.442	
	1 Fuel line kit	CA.446	

Order Reference for Amal Carb. Assemblies — continued

Vehicle Type	Carburettor Details	Cat. No.	Remarks
Austin-Healey Sprite Mark I and II and MG Midget (950 c.c.)	Twin Amal carb. assembly includes:	CA.420	Use of low pressure electric fuel pump recommended
	2 Amal carbs.	CA.423	
	1 Cable set with choke lever	CA.431	
	2 Metal 'O' Rings	CA.438	
	2 Rubber 'O' Rings	CA.443	
	1 Fuel line kit	CA.446	

Order Reference for Components

Description	Cat. No.	Remarks
Amal inlet manifold for BMC 850 c.c.	CA.401	2 required suitable for CA.410
Amal inlet manifold for Sprite/Midget	CA.402	2 required suitable for CA.420
Balance pipe with clips	CA.51	1 required suitable for CA.401/402
Accelerator pedal assembly	CA.105	
Further individual components will be found on relevant Price List		

Packing Data

Cat. No.	Size	Weight
CA.400, 410, 420	Carton 6" x 5" x 5" (15.2 x 12.7 x 12.7 cm)	7 lbs. 3.1 kg
CA.402	" 3½" x 2½" x 3" (8.8 x 6.3 x 7.6 cm)	½ lbs. 225 gr
CA.51	" 6" x 3" x ½" (15.2 x 7.6 x 1.9 cm)	3 ozs. 85 gr
CA.105	" 12" x 4" x 1" (30.4 x 10 x 2.5 cm)	1 lb. .45 kg



SPECIAL CAMSHAFTS

As a means of changing the performance characteristics of an engine, the camshaft offers greater possibilities than any other single component. When an engine has been converted by fitting special heads, carburettor sets and exhaust systems its power output can often be greatly increased by the use of the correct type of special cam.

In general terms, peak power is increased by using a cam of high lift and long opening period but only at the expense of reducing torque at the lower engine speeds. For this reason it is very important to choose the correct camshaft for any particular application. The best way of doing this is to discuss the requirements with one of the Speedwell technical staff or send the fullest details of the engine, vehicle and performance requirements for consideration.

Lift and timing are not the only important factors in comparing one cam with another. The exact cam profile is significant in determining the behaviour of the valve gear and cams of simple geometrical shape have given way to mathematically derived profiles designed to give the required lift diagram at the valve in spite of flexure in the pushrods.

The range of Speedwell special camshafts and their approximate characteristics is as follows:—

SPEEDWELL CAMSHAFTS FOR B.M.C. 'A' SERIES & MINI UNITS

Camshaft CS2

The Speedwell Sports/Racing camshaft has proved itself over three years of competition. It still represents the best compromise for road, Club racing and sprint use. This cam is capable of showing a 10% gain in maximum power over standard and, in conjunction with Speedwell valve springs will run to 7,000 r.p.m. Below 3,000 r.p.m. torque is low but the vehicle remains quite tractable.

Camshaft CS4

This is a high torque cam for strictly road-going use only. Suitable for the motorist who respects his engine, uses moderate r.p.m. and likes to have good accelerating torque throughout the range. In conjunction with Speedwell springs the rev limit is 6,000 r.p.m. High torque is obtained with great flexibility.

Camshaft CS5

For racing only, this cam gives power over the range 5,000 to 8,000 r.p.m. Below 5,000 torque is low and clean carburation impossible to obtain. In suitable engines, outputs in the range 75—80 b.h.p. per litre are obtainable with this cam. Being ground from a standard BMC cam it complies with Group II, Appendix J, F.I.A. Racing Regulations.

NEW CAMSHAFTS

Research into racing camshafts goes on continuously. Details and prices available on request.

PUSHRODS

In conjunction with Speedwell camshaft and rocker gear the use of standard BMC steel pushrods is recommended. Light alloy pushrods, although popular are in fact always slightly inferior. This is because the ratio of rigidity to weight of all light alloys is inferior to that of steel.

SPECIFICATIONS

Type No.	Inlet		Exhaust		Tappet Clearance	Lift at Valve
	Opens BTDC	Closes ATDC	Opens BBDC	Closes ATDC		
CS4	10	50	45	15	·012"	·310"
CS2	21	61	56	26	·012"	·317"
CS5	38	78	73	43	·015"	·320"

Note: The valve lift obtained with any camshaft can be increased approximately 20% by the use of Speedwell high lift rocker gear.

CS2 is a complete new camshaft.

CS4 and 5 are re-profiled from BMC shafts.

Order Reference

Packing Data

Description	Cat. No.	Weight	Diam.	Length
CS4 Camshaft	VA.CS4	4 lbs. (1·8 Kg.)	2" (5 cm.)	14" (36 cm.)
CS2 Camshaft	VA.CS2	4 lbs. (1·8 Kg.)	2" (5 cm.)	14" (36 cm.)
CS5 Camshaft	VA.CS5	4 lbs. (1·8 Kg.)	2" (5 cm.)	14" (36 cm.)

Some of the components listed below, although mentioned in other parts of the catalogue, have been included because of their suitability for competition. Those items for which there is no catalogue reference are obtainable only at the Speedwell Centre. Details and prices will be given upon request.

ENGINE (BMC 'A' AND TRANSVERSE)

	Cat. No.
Racing Pattern Clubman Alloy Head Group III	CH200/R
Balancing and Adjusting Compression Ratio	
Group II Iron Head	CH40/II
Formula III and Group III Iron Head Extra Large Inlet and Exhaust	
Customers own Iron Head G.II	WCH40/II
Racing 7 port Alloy Cylinder Head (details on application)	
Dowling and Matching Inlet Manifold	
Polishing, enlarging Inlet Manifolds	
Bronze Exhaust Guides	
Inlet	
"A" Double Valve Springs (Set)	VA.52
Specially machined caps (Set)	VA.60
"A" Extra heavy double springs (for Cooper S, F III, and FJ only) (Set)	VA.58
"B" Double Valve Springs (Set)	VA.57
"A" Type Oversize Inlet Valves KE 965 1.25"	VA.5
" " " Exhaust " KE 965 1.125"	VA.6
" " " Inlet " KE 965 1.32"	VA.7
" " " " KE 965 1.4"	VA.8
Washer, packing valve spring (Set)	VA.65
High Lift Rocker Gear	VA.100
Rocker Shaft Shim	VA.96
Rocker Pillar Shim	VA.97
CS.2 Camshaft	VA.CS.2
CS.5 " (Group III used with Rockers)	VA.CS.5
CS.7 (Group II Cooper "S")	VA.CS.7I
CS.10 Camshaft (Group II Mini, "A" Type, Mini Cooper)	VA.CS.10
Lightened Cam Followers	
For Lightening and Balancing see price list page 3	
950 "A" Series F.J. Crank	CY.70/FJ
950 "A" Series "Red" Crank	CY.70/R
Racing Weight Lightened Flywheels "A"	
Pistons "A" Type+40 Flat Top	CY.10/40
" " "+60 "	CY.10/60
" " "+60 Contoured crown extra high compression	
" " Flat top 1,080 c.c.	CY.15
" Cooper " " 1,152 c.c.	CY.20
Boring blocks for above	
Surface grind cylinder blocks	
heads	
Set of 4 Con Rods "A" Type, balanced, crack tested and straightened	CY.75
Racing Clutch "A" type 9 Spring	CY.95
Extra Strong Clutch Springs "A"	CYP.2
" " " Mini	CYP.1
Complete Race Engines:	
1150 Group III Cooper, 1071 Cooper S Group II,	
1080 "A" Type, 998 Formula III	
998 c.c. Cooper Group II and III, 1080 "A" Type (7 port) G.T.	
To taking Power Curves on Dynamometer	
Strip down and rebuild engine	
Machine block for F.J. crank	
Boring camshaft journals and fitting special bearings	
Cut valve clearance in block	
Modify Flywheel to F.J. 8 bolt fitting	
Special lock washer	

P.T.O. ▶

Strengthened main bearing cap
Racing plugs

CARBURETTORS

Large S.U. carbs. (see page on S.U.'s)	CA.300
Large Amal carb. sets (see page on Amals)	CA.420
45 DCOE Weber (see page on Weber)	
Floatless Fuel system for Twin and Quadruple Amals	
Air Bells: 1½" for SU Carburetors	CA.81
1½" " "	CA.82
1½" " "	CA.83
1½" " "	CA.84

EXHAUST

Tubular exhaust manifolds (see page on Manifolds)	
Racing Manifold for Cooper "S" (Group II)	XM1/CR
Racing Exhaust kit Cooper (Group III, etc.)	XM1/CRS
Side Exhaust kit (Sprite)	XM5/RS
Straight through Silencers (see page on Supertone)	

SUSPENSION

Heavy competition Anti Roll Bar (Sprite)	AR5/R
Rear Anti Roll Bar Mini, Cooper and "S"	AR.1
Lowering of Mini, Cooper and "S"	
Special lowered struts front (Mini)	
" " " rear (Mini)	
" " " rear High Spring Rate (Mini)	
Wheel spacers (Mini) Sprite	
Extra Long Wheel Studs	
Increase Wheel Caster (Sprite)	
Wide based 13" wheels	
Competition S/A Valves (A.40, A.35, 1-5, Sprite) for lever type shock absorber	

BRAKE LININGS

Anti-fade Competition linings and pads (see Brakes)

TRANSMISSION

Baulk ring conversion kit	
Special Axle Ratios (see Axle and Gear ratio page)	
Close ratio gears for Transverse engines (pre baulk ring)	TB.60/A1
Z.F. Limited Slip Differential (Sprite)	
Close Ratio gears Cooper "S"	

BODY PARTS

Lightweight streamlined Monza bonnet (Sprite)	BP/BA5
Adjustable rake bucket seats	

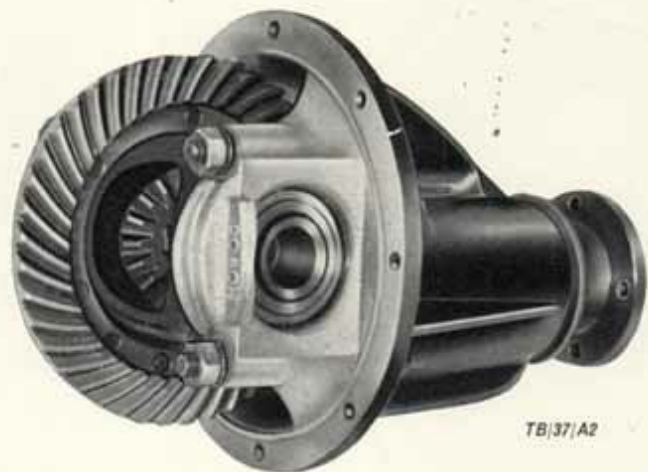
ACCESSORIES

Oil Cooler Sprite	BP.100.A.2
" " Mini	BP.100.A1
Oil Temp. Gauge	IT/W/12
" " Adaptor (block)	ITP
" " " (with oil cooler)	ITP.9
Oil pressure gauge	IT/O/12
Electronic tachometers 0-8,000 4 and 6 cyl. 6 and 12 volts (see Instruments)	
" " 0-10,000 4 cyl. and 12 volts (see Instruments)	
Rev Counter mounting bracket	ITP.10
Extra Fuel Tank Mini, Cooper, "S"	AC.A4.A1
Sump Guard Mini, Cooper, "S"	AC.7/A1
" " 1100	AC.7/A11
Fly-off hand brake Mini, 1100	AC.25.A1
Wood Rimmed Steering Wheels (see steering wheel page)	

ALTERNATIVE AXLE AND GEAR RATIOS

SPEEDWELL

TRANSMISSION and BRAKES



TB/37/A2

Car manufacturers when deciding on suitable gear and axle ratio for a new vehicle have invariably to find a compromise for adequate performance under varying geographic conditions. The absence of an extensive motorway network in this country has led to the general adoption of rather low final drive ratios—this means high engine RPM at normal cruising speeds, contrary to European practice where top gear is usually higher thereby giving low engine RPM for effortless and reliable fast motorway cruising.

Some manufacturers overcome this difficulty by providing an overdrive—though this is not often found on small family saloons. Once a car is in the hands of its owner its use becomes immediately more defined—it may do long distance motoring on fast roads or continuous driving in hilly territory, or even spend most of its time in country districts. Under these conditions it may be advantageous to change the axle ratio for one more applicable to the car's general use.

This applies even more to the competition driver who must adapt the car's performance to suit any particular circuit or rally route. Slow twisty circuits require low axle ratios to give optimum acceleration out of corners and fast circuits with long straights need high ratios for maximum speeds. Only practice can indicate the ideal ratio to use. Gearbox ratios can be varied but their use is only recommended for out and out racing.

Speedwell offer a choice of lower and higher axle ratios for most BMC cars and close ratio gears for BMC 850-997-1100 cc transverse engined cars, such as the Mini, Austin-Cooper and MG 1100. Speedwell will be pleased to advise on the suitability of these for any particular requirements.

Mini Final Drive

From the introduction of the BMC Mini series Speedwell engineers quickly developed both higher and lower final drive units—the lower is ideal for competition, with a 4.1 ratio giving a top gear ratio of 13.6 mph per 1000 RPM against the standard 14.7 mph per



TB/42/A1

P.T.O. ▶

● 12 Months Guarantee ●



1000 RPM. The higher axle ratio of 3.5 gives 15.8 mph per 1000 RPM—ideal for the driver who wishes to have fast effortless economical cruising and at the same time conserve the engine. A very worthwhile modification for all Cooper Mini owners particularly if used with Speedwell Clubman modified engines.

'A' and 'B' Type Final Drive

Cars powered by either the BMC 'A' or 'B' type engines have a greater range of ratios available. These are supplied as complete differential nosepiece assemblies thereby facilitating easier fitting and interchanging.

Mini Close Ratio Gears

Ideal for circuit racing but unsuitable for normal road use. Manufactured from the finest materials these gears have been tested for hundreds of racing miles. Third gear is specially made with straight cut teeth to enable the high ratios to be accommodated.

FINAL DRIVE UNITS

Specification Order Reference Packing Data

Vehicle Type	No Teeth	Ratio	Cat. No.	Weight
BMC 850 cc Mini	18/62	3.444	TB/34/A1	6 lbs.
Cooper Mini	18/63	3.500	TB/35/A1	2.7 Kg.
Morris—MG 1100	17/64	3.766	TB/37/A1	
	16/65	4.062	TB/40/T1	
	15/62	4.133	TB/41/A1	
All 'A' Types	11/41	3.727	TB/37/A2	24 lbs. 10.9 Kg.
Riley 1.5—Wolseley 1500.. ..	10/39	3.900	TB/39/A2	
Metropolitan	9/38	4.222	TB/42/A2	
	9/41	4.556	TB/45/A2	
	8/39	4.875	TB/48/A2	
	8/41	5.125	TB/51/A2	
	8/43	5.375	TB/53/A2	
Other 'B' Types	10/39	3.900	TB/39/A3	24 lbs. 10.9 Kg.
A.55, etc.	10/43	4.300	TB/43/A3	
	9/41	4.556	TB/45/A3	
	8/39	4.875	TB/48/A3	

CLOSE RATIO GEARS

Specification Order Reference Packing Data

Vehicle Type		Std. Gears	SPC Gears	Cat. No.	Weight
BMC 850 cc Mini ..	1st	3.620	2.569	TB/60/A1	5½ lbs. 2.5 Kg.
Cooper Mini ..	2nd	2.172	1.538		
Morris—MG 1100 ..	3rd	1.412	1.233		
	4th	1.000	1.000		
	R	3.620	2.569		

● 12 Months Guarantee ● Speedwell Performance Conversions Ltd., London, England

HEAD GASKETS and VALVE GUIDES



CYLINDER HEAD GASKETS

Speedwell gaskets employ the latest principle of sealing. Within the copper facings a layer of stainless-steel wire mesh embedded in asbestos shares the load produced by tightening down the head all over the joint face. This results in unequalled sealing ability and a gasket so tough that it can actually be re-used two or three times. Engines bored up to .060" oversize can use the HG3 gasket which is also available in a special low-compression version ideal for lowering the compression-ratio of highly tuned engines which have to run for a while on the inferior petrol found in parts of Europe. Another gasket, type HG6, is suitable for use with the largest extra-capacity overbores up to 80 millimetres.

Specification	HG3/H	HG3/L	HG6
Maximum bore size	+ .060"	+ .060"	80.5 mm
Thickness	.030"	.080"	.030"
CR reduction	—	2-2.5	—
Material	Stainless steel mesh — asbestos — copper		

MANIFOLD GASKETS

Made from the same incredibly tough material as Speedwell head gaskets, these manifold-face gaskets can be re-used a number of times.



The round port-holes, matching Speedwell cylinder-heads and manifolds can also be

used with standard BMC heads. Inlet-port holes are increased in size for use with re-worked heads.

Specification

To fit	All BMC A and Mini types
Material	Stainless steel mesh in asbestos
Inlet hole diameter	1 1/8"
Exhaust hole diameter	1 1/4"

● 12 Months Guarantee ●

P.T.O. ▶

VALVE GUIDES

As used in Speedwell alloy heads. Made from high quality cast-iron. External diameters correct drive fit in cast-iron cylinder heads. Internal diameters are correct for use with KE 965 and similar high-quality valve steels. A circlip and groove locate the guide when used in alloy heads.

Specification

Outside diameter	1 1/8" nominal
Valve stem diameter	.280"
Overall length inlet	1 1/4"
" " exhaust	1 1/2"
Material	Cast-iron



Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Head gasket HG3/H	CHP.1	13 1/8" x 5" (33.77 x 12.70 cm.)	5 ozs. (140 gr.)
" " HG3/L	CHP.2	" " " "	" "
" " HG6	CHP.6	" " " "	" "
Manifold gasket MG2	CHP.8	14 1/2" x 2" (36.83 x 5.08 cm.)	2 ozs. (56 gr.)
Decoke set with HG3/H	CHP.3	17 1/2" x 8" (44.45 x 20.32 cm.)	12 ozs. (340 gr.)
" " " HG3/L	CHP.4	" " " "	" "
" " " HG6	CHP.5	" " " "	" "
Inlet Guide	CHP.15	1 1/8" x 1" (3.29 x 2.54 cm.)	2 ozs. (56 gr.)
Exhaust Guide	CHP.16	1 1/2" x 1" (3.81 x 2.45 cm.)	3 1/2 ozs. (98 gr.)

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

**BALANCING AND LIGHTENING
AND SPECIAL CRANKSHAFTS**

SPEEDWELL

ENGINE KITS and PARTS



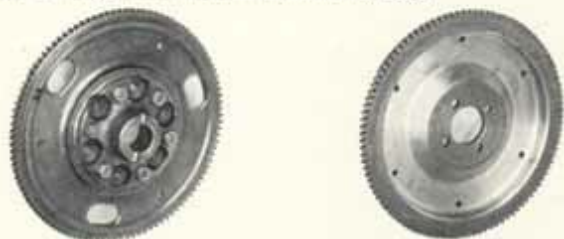
When an engine has to be dismantled for conversion or maintenance it is a good opportunity to have the rotating and reciprocating parts balanced. The main benefit lies in the improved "feel" of the engine which permits full performance to be used and enjoyed without the unpleasant sensations of mechanical vibration often experienced in unbalanced engines. In addition, vibration periods often upset carburation so that many engines are greatly improved in general running by balancing.

The crankshaft, flywheel, clutch and damper are always balanced individually and checked as an assembly so that any part can be replaced without losing the balance.

Connecting-rods are balanced in sets having the same weights of big-end and small-end. They are then crack-tested by a magnetic method to ensure freedom from imperfections which could lead to breakage.

Flywheels of touring car engines are frequently made heavier than necessary in the interests of easy moving-off by relatively unskilled drivers. Converted engines always benefit from using lightened flywheels. Low gear acceleration is improved and torsional vibrations affecting reliability at prolonged high speeds are reduced.

Flywheel lightening by haphazard removal of metal is **extremely dangerous** due to the possibility of such wheels bursting at high speed. The calculated and proven designs used in the Speedwell wheels can be relied on to give maximum benefit with safety. The 'A' type flywheel is lightened, giving a reduction in total moment of 25%, the transverse flywheel by 23%.



It will be noticed that the Speedwell range of equipment does not include light-alloy flywheels. There are a number of reasons for this:—

- (i) The use of light alloy offers no advantage because in simple shapes better rigidity for a given mass is offered by iron.
- (ii) Steel inserts are necessary in alloy wheels for the clutch face.

● 12 Months Guarantee ●

P.T.O. ▶

- (iii) Most important, light alloy lacks the compressive strength to withstand the very high bolt head pressures necessary to hold the wheel against torsional vibration, the idea that dowels can substitute for clamping pressure having been disproved by experience.

Crankshaft Limitations

On converted engines which can, by virtue of modified valvegear run to high RPM, the crankshaft itself may become a limiting factor. As crankshaft failure takes place through fatigue it is not possible to give an exact RPM at which failure will occur but the following may be taken as a guide.

850 c.c. Mini Units

For reliable operation 6000 RPM continuous and 6500 RPM momentary should be regarded as the limit. Using a lightened flywheel will add 200 to 300 RPM to these limits.

Mini-Cooper Units

The stronger crank of this engine will permit 6500 continuous and 7000 momentary. Again, use of a lightened flywheel will add 200 to 300 RPM to these limits.

950 c.c. "A" type Engines

Continuous operation should not exceed 6200 RPM with momentary use of 6700.

Special Crankshaft

Two special crankshafts are available for the 950 c.c. "A" series engines.

These are:—

- (i) The "Red" crankshaft. Directly interchangeable with the standard crankshaft but made of high quality material, this crank will permit about 6700 RPM continuous and 7200 RPM momentary.
- (ii) The "F.J." crankshaft. This crankshaft requires some machining of the block to accommodate but is virtually unbreakable. 8000 RPM can be used and other components become the limiting factor.

Order Reference

Packing Data

Description	Cat. No.	Weight
850 Mini balanced crankshaft	CY.65	21 lbs 9.6 kg
850 Mini balanced lightened flywheel with clutch & SPC springs	CY.80	16 lbs 7.3 kg
850 Mini balanced connecting rod set	CY.75	8 lbs 3.7 kg
950 "A" Series balanced crankshaft	CY.70	20 lbs 9.1 kg
950 "A" Series balanced "Red" crank	CY.70/R	21 lbs 9.6 kg
950 "A" Series balanced F.J. crank	CY.70/FJ	24 lbs 11.8 kg
950 "A" Series balanced lightened flywheel	CY.60	15 lbs 6.8 kg
950 "A" Series balanced clutch c/w SPC springs	CY.90	5½ lbs 2.6 kg
950 "A" Series balanced clutch 9-spring	CY.95	8½ lbs 3.9 kg
950 "A" Series balanced connecting rod set	CY.75	8 lbs 3.7 kg
Cooper-Mini balanced crankshaft	CY.67	21 lbs 9.6 kg
Cooper-Mini balanced lightened flywheel with clutch & SPC springs	CY.82	15 lbs 6.8 kg
Cooper-Mini balanced connecting rod set	CY.75	8 lbs 3.7 kg
1100 "A" Series balanced crankshaft	CY.68	20 lbs 9.1 kg
1100 "A" Series balanced lightened flywheel	CY.86	15 lbs 6.8 kg
1100 "A" Series balanced clutch c/w SPC springs	CY.92	5½ lbs 2.6 kg
1100 "A" Series balanced connecting rod set	CY.76	8 lbs 3.7 kg
1100 Transverse balanced crankshaft	CY.69	22 lbs 10.0 kg
1100 Transverse balanced lightened flywheel with clutch & SPC springs	CY.83	15 lbs 6.8 kg
1100 Transverse balanced connecting rod set	CY.76	8 lbs 3.7 kg

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

OIL COOLER

CHASSIS and BODY PARTS

The heart of an engine is its lubrication system. Longevity and reliability can only be achieved if the lubrication system continues functioning at all times and still more important that the lubrication material itself—OIL—retains its properties even under extreme operating conditions. Unfortunately, heat is one of the dissipated energies produced and one of oils biggest enemies. As temperature rises its viscosity

decreases—gets thinner—thereby reducing the film strength until a point is reached where the oil film between the bearing surfaces can no longer be maintained. Normal engine cooling is provided either by air or water but obviously this does not affect oil temperature to such a great extent.

It is therefore necessary to provide an independent cooling system for the lubricating oil. The fitting of an oil cooler is definitely recommended for continuous fast motorway cruising, competition purposes and for extensively modified engines such as the Speedwell Clubman range. Although not essential, an oil cooler installation will provide an extra factor of reliability for the less radical degrees of engine conversion, or even for unmodified cars which are driven hard.

The Speedwell Oil Cooler consists of a secondary surface light alloy heat exchanger inserted in the cooling system. On the 'A' and 'B' BMC engines this is done between the main oil gallery outlet and filter housing inlet. Special adaptors are provided for this purpose together with suitable oil resistant hose.

The competition driver will be well advised to fit an oil temperature gauge. For this purpose a special adaptor is provided suitable for the Speedwell oil temperature gauge. This is fitted immediately after the cooler giving the temperature at which the oil is fed to the bearings. An adaptor is also available to fit an oil temperature gauge without an oil cooler.



Oil Temperature Gauge

Order Reference

Packing Data

Description	Cat. No.	Size	Total Weight
Complete oil cooler kit for 'A' type engines	BP.100/A2	Matrix: 9" x 3" x 2" 22 x 7.6 x 5 cm	
Complete oil cooler kit for Mini Transverse engine	BP.100/A1		
Complete oil cooler kit for 'B' type engines	BP.100/A3	Packed: 16" x 6½" x 4½" 40 x 16.5 x 11.4 cm	5 lbs. 2.2 Kg.
Oil temperature gauge	IT.W/12		
Gauge adaptor with cooler ..	IT.PA/8		
Gauge adaptor without cooler ..	IT.PA/9		

12 Months Guarantee

Speedwell Performance Conversions Ltd., London, England

HIGH LIFT ROCKER GEAR

ENGINE KITS and PARTS

The principle of improving engine performance by using a high valve lift is well known. Usually however this requires the use of a high-lift camshaft and the considerable dismantling necessary to install it. The Speedwell high-lift rocker set gives all the advantages of a high-lift cam but can be quickly and easily installed by anyone who can adjust a set of tappets.

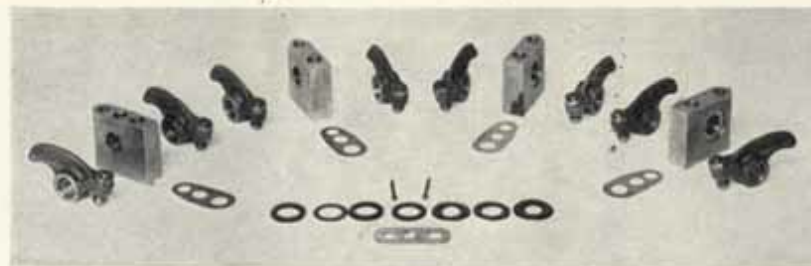
Diagram 1 shows how the lever ratio of Speedwell rockers acts to give a 20% increase in valve lift over the standard rocker. The gain in engine power resulting depends upon a number of other factors including valve diameter, cam lift and port efficiency but up to 10% increase of BHP is usual.

In addition to the increased lift, the low effective-weight of the Speedwell rockers, resulting from the use of top-grade materials and scientific stress-distributing design, give an increase in RPM without bounce of approximately 5%, i.e. an engine previously limited by valve-bounce to 6,600 r.p.m. would run to nearly 7,000.

Further, although the actual points of opening and closing of the valve remain the same, the effective period of opening is increased. This is because the valve opening is not "felt" by the engine until a certain small lift is reached (A in diagram 2). Thus the true period of valve overlap B is effective only over period C. With Speedwell rockers fitted, the lift A is reached sooner so that the effective overlap is increased to D.



VA.90



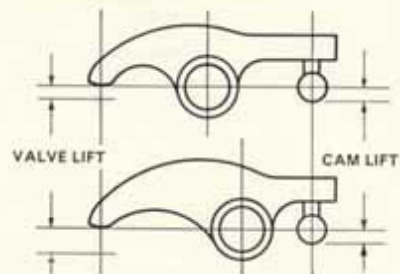
VA.100

The effect of this is to increase maximum power by improved scavenging of the cylinders. When the Speedwell rocker gear is applied to an engine already fitted with a cam of high overlap (e.g. a Cooper-Mini) the power output is further increased but a small reduction in torque is noticed below 3,000 R.P.M. This effect is common to all semi-racing engines and is inseparable from the use of high overlap.

The experienced tuner having read this far will at once have seen the possibilities of using Speedwell rockers in conjunction with various racing cams to obtain exceptional power outputs. In fact, Speedwell camshaft CS5 is intended for use in this manner, giving the best valve gear combination currently available. Speedwell rockers are alloy steel forgings heat-treated throughout and entirely suitable for further lightening and polishing by those conversant with racing tuning. The kit supplied includes eight rockers, adjusting screws and nuts, four special steel pillars and the necessary shims and lock plates. The fitting instructions incorporate a test to see that safe valve-lift is not exceeded.

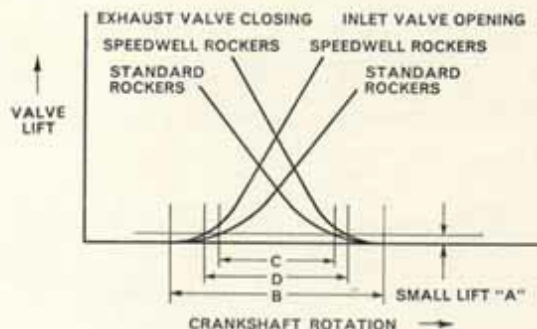
Diagram 1

STANDARD ROCKER



SPEEDWELL ROCKER

Diagram 2



● 12 Months Guarantee ●

P.T.O. ▶

Specification

Order Reference

Packing Data

Technical Details	Description	Cat. No.	Weight
Material—Nickel Chrome Molybdenum Alloy Steel	Complete Rocker Gear Set	VA.100	2.8 lbs 1.28 kg
Process—Forged, machined and ground	Rocker only with screw and nut	VA.90	
Heat Treatment—Hardened and tempered to 80 tons tensile strength	Pillar (plain)	VA.91	
Lift Increase—20% approx.	Pillar (oilway)	VA.92	
Pillars—Mild steel, fully machined	Adjuster	VA.93	
Adjusters—Solid hardened-steel ball-ends	Nut	VA.94	
	Lockplate	VA.95	
	Shim-rocker shaft	VA.96	
	Shim-pillar	VA.97	

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

BMC 'A' and 'B' Engines VALVE & VALVE SPRINGS

SPEEDWELL

ENGINE KITS and PARTS

Anyone who has seen a racing engine after a valve has failed and dropped into the cylinder is unlikely to forget that here is a component in which one cannot afford to compromise quality. The operating conditions of an exhaust valve include a head temperature of over 1000°F—cherry red heat, an atmosphere of corrosive combustion products and the load of the valve-spring applied perhaps 20,000 times per minute. Under these conditions a valve made of ordinary steel would break up in a matter of seconds.

To meet these exacting requirements, Speedwell valves are forged from KE965, the top quality austenitic valve steel used in racing and aircraft engines, machined and ground all over to closely controlled dimensions. So successful are the results that in many years of racing and engine conversion **not one single failure** attributable to Speedwell valves has occurred.

Other important features of the design include the stem diameter and finish which are correct for the material used and the shape of the underside of the valve head which is a delicate compromise between strength, weight, flexibility and gas-flow properties. This shape co-operates with the valve-seat angle in giving optimum flow and the valves should always be used with the 30 or 45 degree angle cut on the valve when received.



SPECIFICATION

Materials—KE965 Austenitic steel; SILCHROME EN52 for inlet valves where operating conditions are not extreme.

Process—Forged, machined and ground.

Stem diameters

Stem lengths

Cotter grooves

Head diameter—Standard or oversize.

To fit standard equipment of model concerned.

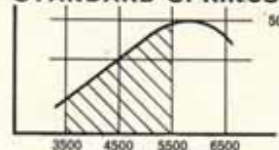
Order Reference

Description	Material and Diameter	Cat. No.
BMC Mini, A MK I & II, 1100 Series Exhaust	KE965 1-0"	VA.1
BMC Mini, A MK I Series Inlet	EN52 1-1"	VA.2
BMC Mini-Cooper, 1100 & A MKII Inlet	EN52 1-156"	VA.3
BMC Mini-Cooper, 1100 & A MKII Inlet	KE965 1-156"	VA.4
Oversize, Speedwell Clubman Inlet	KE965 1-25"	VA.5
Oversize Exhaust	KE965 1-125"	VA.6
Oversize Racing Inlet	KE965 1-32"	VA.7
Oversize Racing Inlet	KE965 1-4"	VA.8
BMC B Series except MGA & B Inlet	EN52 1-5"	VA.20
BMC B Series except MGA & B Exhaust	KE965 1-280"	VA.21
BMC MGA & B Inlet	EN52 1-563"	VA.25
BMC MGA & B Inlet	KE965 1-563"	VA.26
BMC MGA & B Exhaust	KE965 1-344"	VA.27

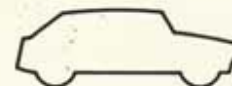
VALVE SPRINGS

There are many half-truths in circulation about the value of good valve-springs. It is often said for example that strong springs will increase the maximum RPM of the engine but not raise the power. Our example shows two cars with identical engine power curves, 50 BHP maximum in each case. Car A is fitted with standard valve springs and is limited by valve-bounce to 5,500 RPM maximum. On changing gear the revolutions fall to approximately 3,500. Over the usable

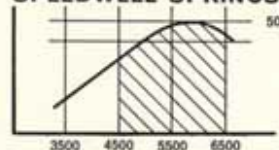
STANDARD SPRINGS



AVERAGE 30 BHP



SPEEDWELL SPRINGS



AVERAGE 40 BHP



RPM range, shown shaded, the average power available is about 30 BHP. Car B is fitted with Speedwell valve springs which have raised the valve-bounce point to 6,500 RPM. After gear-change the RPM falls to about 4,500. Now the average power over the usable RPM range is seen to be much higher, in fact about 40 BHP. Thus by changing only the valve springs about 33% more power is available for acceleration. The power gained in any particular case depends on the shape of the power-curve and valve-bounce point but the example given is typical.

Special valve-springs work at very high stress and, to ensure reliability only the best quality materials are good enough. Chrome-vanadium steels are used in the wire for Speedwell springs. Heat treatment and surface finish which can have a remarkable influence on spring life are closely controlled. Dimensions of single springs are selected so as to avoid spring surge up to the highest intended RPM. Double springs are designed so that surge periods of inner and outer spring never coincide within the usual RPM range.

The advantages of double valve springs are:—

- High spring force without high stress
- High RPM with reliability
- High permissible lift.

Single springs have lower cost in their favour and also permit the use of oil seals or shrouds to reduce oil consumption down the valve guides.

Research into valve and valve spring materials, processes and design goes on continuously. When better valves and springs are made Speedwell will make them.

SPECIFICATION

Description	Seat Pressure	Lift Pressure	Maximum Lift
BMC A Single	75 lbs.	130 lbs.	-32"
BMC A Double	90 lbs.	150 lbs.	-40"
BMC B Single	90 lbs.	150 lbs.	-32"
BMC B Double	140 lbs.	240 lbs.	-50"

Order Reference

Description	Cat. No.	Remarks
BMC A Single Spring (Set of 8)	VA.50	I GT Heads
BMC A Double Spring " "	VA.52	Clubman Heads
BMC B Single Spring " "	VA.55	All except MGA & B
BMC B Double Springs " "	VA.57	MGA & B competition
BMC A Valve Caps " "	VA.60	Essential with doubles

12 Months Guarantee

P.T.O. ▶

12 Months Guarantee

Speedwell Performance Conversions Ltd., London, England

ANTI-FADE LININGS and SERVO UNITS

SPEEDWELL
TRANSMISSION and BRAKES

The Braking Problem

To provide the kind of braking that everyone wants, a braking system has to provide the following:—

- (1) Power—the brake must be able to bring the wheels to locking point at any speed and with reasonable pedal pressure.
- (2) Progressiveness—as maximum braking depends on holding the wheels just short of locking, response to the pedal must be progressive and finely controlled.
- (3) Freedom from fade—braking involves dissipating the energy of the moving vehicle into heat, all of which appears at the surface of the lining in contact with the drum or disc. The resulting rise in temperature causes some brake lining materials to lose their frictional "grip" with consequent loss of braking power.



Most brakes in normal road use provide reduction of speed at moderate speeds of 50 to 20 m.p.h. and braking to a standstill from low speeds about 30 m.p.h. This type of braking is so frequent that it must be carried out with a very light pedal pressure to avoid fatigue. Practically all modern cars fulfill these requirements admirably, braking to wheel-locking point from 30 m.p.h. with low pedal pressures.

However, these results have generally been obtained by the use of soft, high-friction lining materials which are prone to brake-fade. The weakness of this method is soon apparent when the car is subjected to fast-average driving involving frequent heavy braking from high speed. Braking power is soon lost to a serious extent. When braking from near maximum speed the onset of fade is frequently so fast that the general impression is one of simple lack of braking power which becomes worse, giving the unpleasant sensation of not stopping at all.

Anti-Fade Brake Linings

Fortunately a simple and inexpensive remedy for these troubles exists in the form of Speedwell Anti-Fade brake linings—rigid moulded asbestos compound linings with a brass wire reinforcement. After fitting, they are bedded-in by a process of deliberate heavy braking after which they are fade-free. The only disadvantage is that heavier pedal pressure is required for gentle braking from low speeds—a small price to pay for dependable, powerful braking during fast motoring. Cooper-Mini, Sprite Mark II (1100 cc) and Morris 1100 already fitted with disc brakes can be supplied with improved discpads having similar properties to the drum brake linings. Should the increased pedal pressure be found undesirable it is quite possible to fit a Servo unit to apply the extra pressure for the driver, giving the best effortless braking.

Brake Servo Units

The brake servo uses engine power to assist in the application of the brakes and reduces pedal pressure necessary for a given braking effect by 40–50%. Inlet manifold suction is used to move a large diaphragm, driving a master-cylinder similar to the one operated by the brake-pedal to provide extra pressure to the brake cylinders.

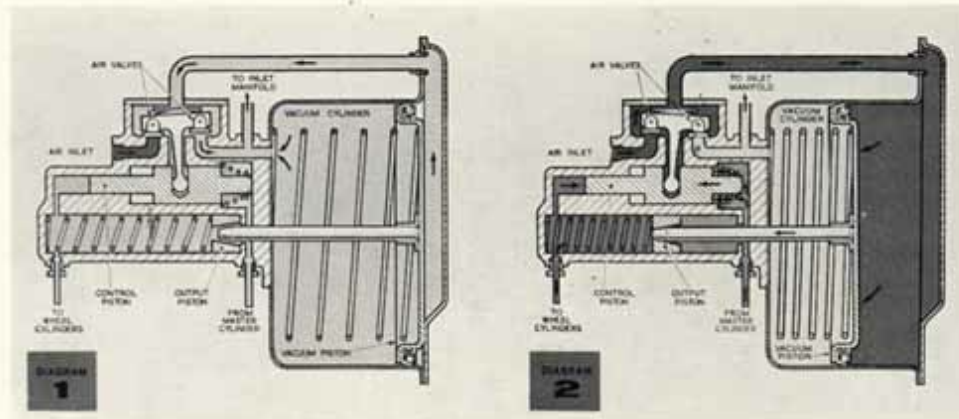


Diagram 1 shows the unit in the 'at rest' position with no pressure in the hydraulic system. The valve is open to the inlet manifold and the air has been drawn from both sides of the piston and the vacuum on both sides is equal. This is the 'suspended vacuum' system.

When the foot pedal is applied hydraulic pressure is exerted throughout the whole system and equally on both ends of the valve control piston. As one end of the piston is larger than the other, an equal pressure per square inch on both ends causes a proportionately greater thrust to be exerted on the large end and the piston moves (to the left as drawn) and the 'T' shaped lever opens the valve to the atmosphere. The air admitted to the right-hand end of the vacuum cylinder drives the piston to the left and the piston rod first seals the centre hole in the output piston and, continuing the movement, applies pressure on the fluid proceeding to the wheel cylinders and to the small end of the valve control plunger. See diagram 2.

This movement of the output piston continues until the thrust on the small end of the plunger by the high fluid pressure overcomes the thrust by the low-pressure fluid on the large end. The valve control piston is thus moved back, closing the air valve. At this point both valves are closed and the brakes are being held on.

Order Reference

Packing Data

Vehicle	Lining Cat. No.	Servo Cat. No.	Weight
Mini—850 cc Models	BK.A1	BKS.A1	BK.A1, etc. 5 lbs. 2.2 kg
Elf & Hornet Mk II	BK.A1/E	" "	
Mini-Cooper Front Pads	BK.A1/CF	BKS.A1/C	BK.A1, etc. 9 lbs. 4 kg
Mini-Cooper Rear Linings	BK.A1/CR	" "	
Austin A.40	BK.A2	BKS.A2	BK.A1, etc. 9 lbs. 4 kg
Austin A.40 Mk II	BK.A2/II	" "	
Austin A.55, etc.	BK.A3	BKS.A3	BK.A1, etc. 9 lbs. 4 kg
Austin A.35	BK.A4	BKS.A4	
Sprite & Midget	BK.A5	BKS.A5	BK.A1, etc. 9 lbs. 4 kg
Sprite & Midget 1100 cc Front Pads	BK.A5/1F	BKS.A5/11	
Sprite & Midget 1100 cc Rear Linings	BK.A5/11R	" "	BK.A1, etc. 9 lbs. 4 kg
Ford Anglia 105E	BK.A7	BKS.A7	
Morris 1000	BK.A15	BKS.A15	BK.A1, etc. 9 lbs. 4 kg
Morris 1100 Front pads	BK.A11/F	BKS.A11	
Morris 1100 Rear linings	BK.11/R	" "	BK.A1, etc. 9 lbs. 4 kg
Morris Oxford V. VI	BK.A3	BKS.A3	
Riley 1.5	BK.A20	BKS.A20	BK.A1, etc. 9 lbs. 4 kg
Wolseley 1500	BK.A25	BKS.A25	
Wolseley 15/60, etc.	BK.A3	BKS.A3	BK.A1, etc. 9 lbs. 4 kg

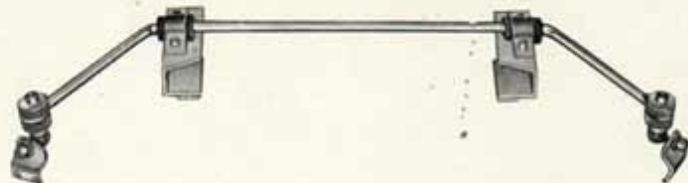
NOTE: Brake linings are supplied mounted on shoes as complete car sets of 8. It would be appreciated if the old linings and shoes are returned (U.K. only).

● 12 Months Guarantee ●

P.T.O. ▶

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England



Speedwell Anti-roll bars are designed to improve road-holding in relation to spring rate, laden weight, performance and steering characteristics and have been produced after exhaustive tests under both normal road and race track conditions.

The Speedwell Anti-roll bar functions by reducing body roll—this in turn improves handling in several ways—improved steering response—elimination of wheel lifting under hard cornering—better balance between under and oversteer.



AR.15 anti-roll bar fitted to Minor 1000

Some vehicles may already be fitted with an anti-roll bar which is not sufficiently effective and the keen motorist will appreciate the improvement after fitting a Speedwell unit

The immediate advantage is reduced roll sensation and increased riding comfort. Passengers no longer need to "brace" themselves for every corner and some forms of car sickness can be avoided.

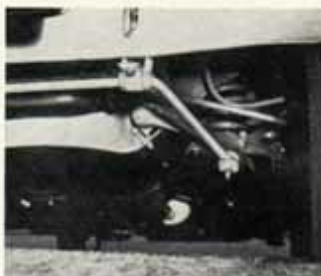
Faster yet safer average speeds can be maintained with less effort. In addition,



AR.4 anti-roll bar fitted to A.35

steering "feel" becomes more responsive as any correction on the wheel is immediately effective without the usual lost motion due to initial body roll—of special benefit with vehicles tending to oversteer.

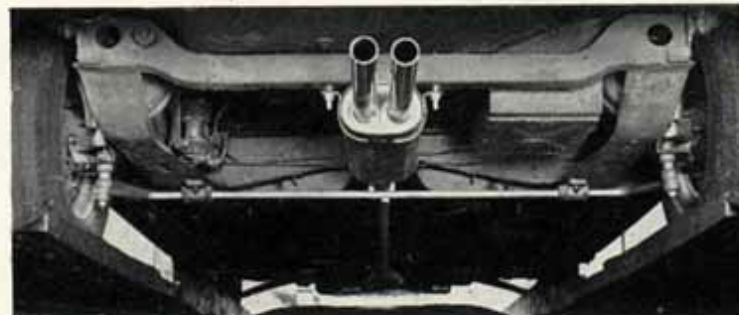
Most anti-roll bars are fitted at the front—a notable exception being the BMC Mini range where the bar is fitted at the rear to minimise the inherent tendency to understeer and to avoid front wheel lift under hard cornering.



AR.3 anti-roll bar fitted to A.55 Mark II, etc.

● 12 Months Guarantee ●

P.T.O. ▶



AR.1 Rear anti-roll bar fitted to Mini

Specification

Bars are manufactured from high grade spring steel finished in aluminium resin to avoid corrosion. Mounting brackets and strengthening boxes are all manufactured from heavy gauge mild steel and protected against corrosion. All knuckle joints are provided with lock nuts.

Order Reference

Vehicle Type	Cat. No.	Remarks
Austin Mini/Cooper/Elf and Hornet	AR.1	Fits at rear.
Austin A.40	AR.2	
Austin A.40 Mk. II	AR.2/11	Bar only—existing brackets used.
Austin A.55/Wolseley 15/50, etc. ..	AR.3	No drilling required.
Austin A.35/A.30	AR.4	
Austin-Healey Sprite I and II/Midget	AR.5	
Ford Anglia 105 E	AR.7	Fits in addition to original.
MGA—all types	AR.10	
Morris 1000	AR.15	
Riley 1.5/Wolseley 1500	AR.20	
Sunbeam Alpine, Rapier/Minx, etc.	AR.22	Replaces original.

Packing Data

Size:	12" x 39" x 3½" (32 x 99 x 9.5 cm) Carton
Gross:	Weight: 10-12 lbs. (4½-5½ Kg).
Display:	Showcard.

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

TRIUMPH HERALD 12-50
Vitesse and Spitfire
REAR CAMBER COMPENSATOR

SPEEDWELL

SUSPENSION EQUIPMENT



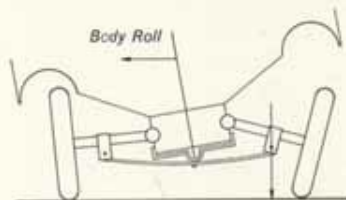
RC/23/1

Here is an entirely new product designed and developed to increase the road holding and cornering of the Triumph with its swing axle independent rear suspension.

The Speedwell Camber Compensator reduces body roll, prevents wheel lifting and improves steering response. Under extreme cornering conditions transition into a slide is smooth and the tendency to 'hop' and tuck wheels under is reduced. The problem of weight transfer is apparent in all motor cars whether they have rigid or independent rear suspension. This usually takes the form of lifting of the rear wheel with consequent loss of stability. In the case of swing-axle rear suspension the resultant sideways hopping causes tucking under of the outside wheel, seriously reducing control.

On straight roads, under normal conditions, the camber compensator plays little part in the suspension of the car. As the car corners, however, body roll results in a weight transfer from the wheel on the inside of the bend to the outside wheel. It is under these conditions that the compensator really begins to control and improve road holding.

In the diagram it will be noted how the compensator keeps the wheel on the road where otherwise it would lift off the ground. The total result is improved ride, better cornering power, and road holding.



Right-Hand Bend

The Herald Camber Compensator consists of a leaf spring slung from one radius rod to another. The channel section bracket is bolted to the chassis using 4 bolts and nylocs.



RC/23

Specification

Fully heat treated selico manganese spring steel to B.S. 1429.
 Mild Steel channelled bracket. Heavy duty webbing strap.

Order Reference

Packing Data

Order Reference	Packing Data	Approx. Size	Packing
Triumph Herald pre 1963	RC/23	36" x 3" x 3" (92 x 8 x 8 cm)	11 lbs. (5 kg)
Triumph Herald 1200	RC/23/11	Nett Weight	Corrugated carton
Triumph Vitesse	RC/23/1	Gross Weight	12½ lbs. (5.75 kg)
Triumph Spitfire	RC/24	Display material	None
Triumph 12-50	RC/23/11		

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

VOLKSWAGEN & DAUPHINE
REAR CAMBER COMPENSATOR

SPEEDWELL

SUSPENSION EQUIPMENT

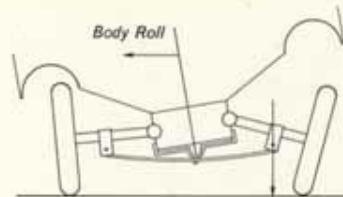


Here is an entirely new product designed and developed to increase the road holding and cornering of the Volkswagen and Dauphine with their swing axle independent rear suspension.

The Speedwell Camber Compensator reduces body roll, prevents wheel lifting and improves steering response. Under extreme cornering conditions transition into a slide is smooth and the tendency to 'hop' and tuck wheels under is reduced. The problem of weight transfer is apparent in all motor cars whether they have rigid or independent rear suspension. This usually takes the form of lifting of the rear wheel with consequent loss of stability. In the case of swing-axle rear suspension the resultant sideways hopping causes tucking under of the outside wheel, seriously reducing control. This is a noticeable characteristic of the Volkswagen & Dauphine.

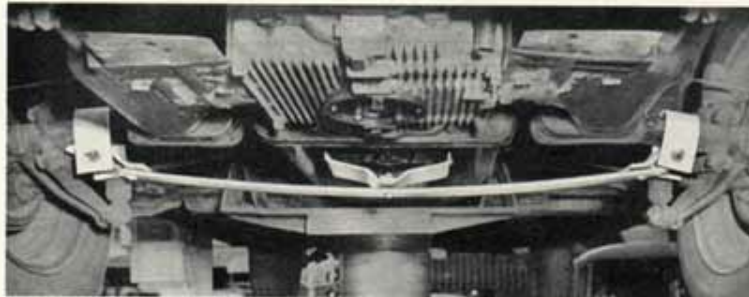
On straight roads, under normal conditions, the camber compensator plays little part in the suspension of the car. As the car corners, however, body roll results in a weight transfer from the wheel on the inside of the bend to the outside wheel. It is under these conditions that the compensator really begins to control and improve road holding.

In the diagram it will be noted how the compensator keeps the wheel on the road where otherwise it would lift off the ground. The total result is improved ride, better cornering power, and road holding.



Right-Hand Bend

The Camber Compensator consists of a leaf spring attached to the drive shaft casings. The bracket is bolted to the gearbox housing with existing bolts.



Specification

Fully heat treated chrome vanadium spring steel E.N. 47.
 Mild Steel bracket. Heavy duty webbing strap.

Order Reference

Packing Data

Vehicle	Cat. No.	Approx. Size	Packing
Volkswagen 57-60 up to chassis 1726005	RC/50	36" x 3" x 3"	6½ lbs. (3 kg)
Up to " 3193506	RC/50/1	Nett Weight	Corrugated carton
Volkswagen 61-64 & 1500	RC/50/11	Gross Weight	7½ lbs. (3½ kg)
Dauphine	RC/30	Display material	None

● 12 Months Guarantee ●

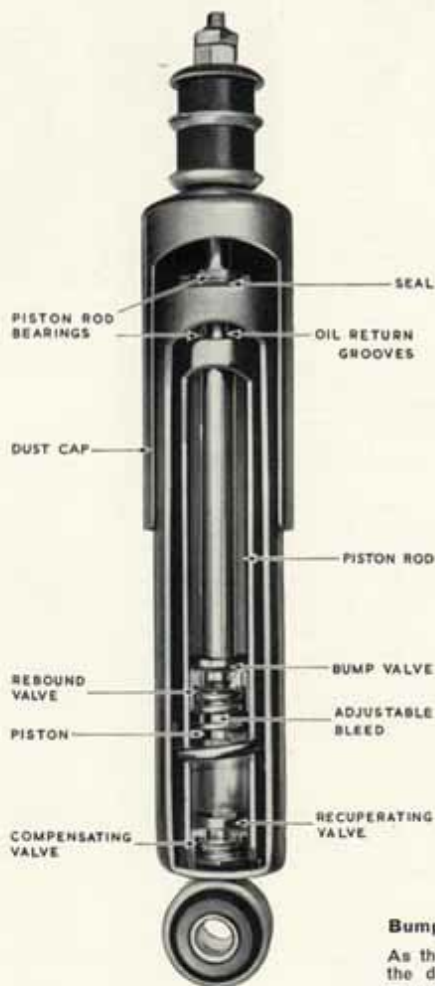
Speedwell Performance Conversions Ltd., London, England

DOUBLE ACTING TELESCOPIC SHOCK ABSORBERS

SPEEDWELL

SUSPENSION EQUIPMENT

SILENT · PROGRESSIVE · ADJUSTABLE · 2 YEARS GUARANTEE



All vehicle suspension systems are already equipped by the manufacturer with some sort of damping device or shock absorber as it is usually called. Not all cars are fitted with the telescopic type, though it is technically better by virtue of its long working stroke which enables adequate damping to be provided with much lower internal stresses and fluid pressures than in the lever type of shock absorber. Conversion brackets are supplied for certain cars to enable Speedwell telescopics to be fitted in place of the original lever type.

The main purpose of fitting a top quality performance shock absorber is that besides acting as a damper certain characteristics can be incorporated to improve road holding, rear wheel adhesion and eliminate rear axle tramp. The Speedwell telescopic fulfills this role admirably—it is a hydraulic double acting unit with damping action on both bump and rebound. It is also adjustable with the dual purpose of ride selection and wear compensation. This provides many more possibilities in suspension control not found in normal telescopics.

The bleed setting is the most important factor in determining the behaviour of the vehicle over slight bumps such as encountered on normal good roads. Too weak a bleed setting results in sway and pitch with poor cornering behaviour. Too hard a bleed setting results in an uncomfortably harsh ride. The settings of the Speedwell damper offer alternatives between these extremes. Setting 1 is ideal for normal road use giving adequate damping and maximum passenger comfort. Setting 2 offers a slightly more controlled ride with a remarkable improvement in wheel adhesion and cornering behaviour. Settings 3 and 4 enable the chosen characteristics to be maintained against wear over a very long period. The damper is normally fitted at position 1, which brings the largest bleed hole into operation. As piston wear takes place, leakage of fluid has the effect of increasing the bleed action. By selecting position 2 the next smaller bleed hole comes into operation so that the total bleed is the same as originally at number 1.

Adjustment

To adjust, the damper is removed from the car and pushed into its fully closed position. A peg on the adjusting bush engages with a slot in the base of the damper. The peg can be felt to engage by rotating the dust cap. An arrow on the cap indicates the existing setting—1, 2, 3 and 4. The setting is changed by turning the dust cap to the right by the number required. Location is by spring-loaded ball giving a well defined click.



Bump Action

As the piston is driven towards the bottom of the damper, oil is forced through the bleed passage to the space above the piston and through the compensating valve into the reservoir contained between the inner and outer tube. With rapid bump movement, oil will also flow through the bump valve. Resistance to movement is controlled by the spring pressure and seating dimensions of the compensating valve in conjunction with the size of bleed passage and bump valve holes.

Rebound Action

As the piston moves upwards oil is forced through the bleed passage in the piston and when the movement is rapid through the rebound valve. At the same time, oil enters from the reservoir from the recuperating valve to make up for the volume of piston rod withdrawn. Resistance to movement is controlled by the spring pressure, seating dimensions and number of holes in the rebound valve together with bleed passage dimensions. Valves are so arranged as to give progressive action in relation to the severity of bump and rebound. The bleed passage consists of a hole in the piston which lines up with any of the four holes in the surrounding adjusting bush.

Aeration

As fluid is the damping medium it follows that the presence of the air would considerably reduce the effectiveness of the damper. The Speedwell telescopic overcomes this problem by the special design of the recuperating valve which like all the other valves in the unit is of an ingenious concentric type giving large flow areas for small valve movement. A helical separator submerged in the oil reservoir also assists in eliminating aeration. In single tube designs the main sealing gland has to withstand the full pressure under rebound action at the point where the piston rod enters the damper. The Speedwell design avoids this by providing two oil return grooves leading back to the reservoir, thus relieving the main gland of internal pressures. All these points assist in producing a shock absorber designed for long arduous work and which is in fact guaranteed for two years.

Specification

Shock absorber casing is made of cold drawn seamless heavy gauge steel tube. Control valves are of tempered spring steel. Hydraulic passages are precision machined and flow tested prior to assembly. Brackets where supplied are of steel, welded and machined. It is not possible to fit Speedwell telescopics on all cars and in some cases on the front or rear only.



TK/R.15 is fitted to Morris 1000

Order Reference

Vehicle Type	Front Car. No.	Rear Car. No.	Remarks
Austin Seven/Mini/Cooper	TS/F 232A	TS/R 3352	
Austin A.40/11 61/62		TS/R 3104	
Austin A.55/A.60, ecc.		TK/R 3	With brackets
Bristol 405 54/59	TS/F 3129	TS/R 4600	
Citroen 15 39/45	TS/F 4255	TS/R 4227	
Citroen 11 37/56	TS/F 3125	TS/R 4227	
DKW 1000	TS/F 3127	TS/R 3126	
Junior	TS/F 2629	TS/R 3633	
Fiat 500 57/60	TS/F 2401	TS/R 1700	
600 55/59	TS/F 2603	TS/R 2202	
1000 56/60	TS/F 2051	TS/R 3928	
1800/2100	TS/F 3157	TS/R 3900	
Ford Anglia/Prefect		TS/R 3350	
New Popular 59/61		TS/R 3350	
Anglia 105 59/61		TK/R.7	With brackets
Hillman/Rapier/Gazelle 56/61	TS/F 2203	TS/R 4400	
Estase/Husky	TS/F 2203		
Humber Super Snipe 52/57	TS/F 2950	TS/R 4053	
Jaguar Mk. VII/VIII/IX/XK140	TS/F 2302	TS/R 4252	
2.4, 3.4, 3.8	TS/F 2928	TS/R 4053	
Jensen 541	TS/F 2759	TS/R 3501	
Mercedes 180/180D 56/60	TS/F 2801	TS/R 4652	
190/220 55/59	TS/F 2805	TS/R 3000	
220 60/61	TS/F 2804	TS/R 3000	
MG Magnette ZA & ZB 53/59	TS/F 4452	TS/R 4656	
Morris Minor 49/61	TS/F 2552	TS/R 3629	
Oxford 54/57	TS/F 3153	TK/R.15	With brackets
57/58	TS/F 3153	TS/R 3629	
Morris Oxford V/VI/Wolseley 15/60 ecc.		TK/R.3	With brackets
Naab Metropolitan	TS/F 1600	TS/R 4650	
Panhard Dyna 58/60	TS/F 2726	TS/R 2553	
Peugot 403/404 60/61		TS/R 4900	
Porsche 356 56/60	TS/F 2427	TS/R 4056	
Renault Dauphine/Florida 56/59	TS/F 2151	TS/R 2554	
56/61	TS/F 2152	TS/R 2757	
Riley 1.5/Wolseley 1500		TK/R.20	With brackets
Rover 60-105 53/59	TS/F 3100	TS/R 4058	
3 litre	TS/F 3451	TS/R 4253	
Saab 96 60/61	TS/F 2727	TS/R 3051	
Simca Aronde all models	TS/F 2450	TS/R 2450	
Standard Vanguard	TS/F 2735	TS/R 3651	
8 and 10	TS/F 2053		
Triumph TR1/II/III	TS/F 1650		
Vauxhall Cresta/Velox 55/57	TS/F 2200	TS/R 3601	
Victor	TS/F 2605	TS/R 4002	
Cresta, ecc. 58/60	TS/F 2605	TS/R 3904	
Volkswagen 53/59	TS/F 2825	TS/R 2625	
60/61	TS/F 3025	TS/R 3128	
Volvo 1225	TS/F 2402	TS/R 3600	

● 2 Years Guarantee ●

P.T.O. ▶

● 2 Years Guarantee ●

Speedwell Performance Conversions Ltd., London, England

TEMPERATURE—PRESSURE GAUGES AND AMMETERS

SPEEDWELL

INSTRUMENTS and PANELS



Temperature Gauge



Oil Pressure Gauge



Combined Gauge



Ammeter

Here is a complete range of instruments designed for the enthusiastic motorist, far superior in quality to original equipment gauges. Their design and construction outclasses other proprietary instruments in legibility, accuracy and reliability. These beautiful gauges include several interesting features: Internal illumination is built into the case assembly ensuring that the light is evenly distributed over the dial, the gauges are easily read at night and there are no stray light rays under the dashboard. The neat bulb holder is a slide fit into the casing and is connected to the existing panel-light wiring via a screw type terminal.

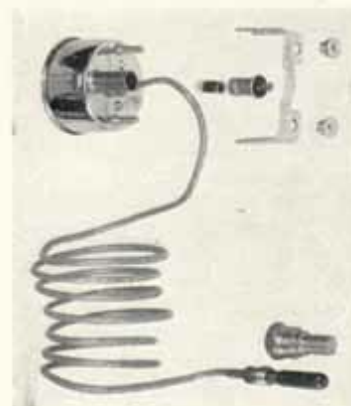
The temperature gauge capillary tube is plastic sheathed which eliminates the possible risk of a short circuit as a result of accidental contact with the electrical system in a crowded engine compartment. The sensitive bulb is of the "dry" type fitted to a "pocket" adaptor which in turn is fitted to the radiator, water hose, engine block or oil cooling system. The advantage of this method is that it is not necessary to drain any fluids if the temperature gauge has to be disconnected and when installing the gauge only a $\frac{1}{16}$ " (11 mm) hole is required in the bulkhead.

SPECIFICATION

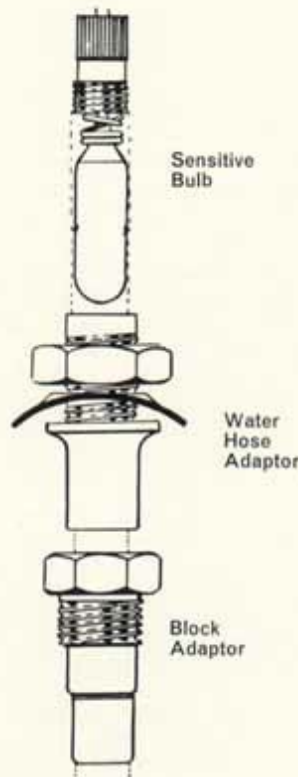
Heavy gauge brass casings chrome plated throughout with polished bezel. Precision arc and pinion movement of exceptional accuracy. Convex optical glass. Matt black dials with white figures and pointer. Temperature scales in centigrade—Pressure scales in pounds per square inch. Brass bulb holder with 6v or 12v bulb. 2" panel apertures required for each instrument.

Water temperature gauges fitted with 5' capillary tubes are available with a choice of adaptors—see details overleaf—and unless specified otherwise a $\frac{1}{8}$ " NIF—SAE block adaptor is fitted. A special adaptor can also be supplied for fitting into top radiator hose—in such installations, however, the gauge registers radiator and not block temperature. For BMC 'A' Series and Mini engines a special top water outlet elbow is available. The oil pressure gauges are supplied complete with 5' of copper tubing and block adaptor to screw in place of the oil warning light switch no longer required. For measuring oil temperature an adaptor is available for $\frac{1}{2}$ " hose as used with oil cooler systems. Engine block adaptors for certain other models are also available.

Arc and
Pinion
Movement



Complete Gauge



Order Reference

Description	Cat. No.	
Water or Oil Temp Gauge		
40-120°C, 12v bulb	IT/W/12	Note: Extra long capillary pipes are available for rear engine cars. Add Ref. LC when ordering.
" " 6v bulb	IT/W/6	
Oil Pressure Gauge		
0-140 lbs. per sq. in., 12v bulb ..	IT/O/12	
" " " " 6v bulb ..	IT/O/6	
Combined Pressure and Temp. Gauge		
50-110°C.		
0-85 lbs. per sq. in. 12v bulb ..	IT/C/12	
" " " " 6v bulb ..	IT/C/6	
Ammeter		
-30 to +30 amp., 12v bulb	IT/A/12	
" " " " 6v bulb	IT/A/6	

Special Adaptors

Description	Ref.	Suitable for	
$\frac{1}{8}$ " NIF—SAE Block Adaptor	IT/PA/1	BMC	One of these supplied with Temp. gauge
$\frac{1}{8}$ " BSP " " " "	IT/PA/2	Ford	
Top Water Hose Adaptor ..	IT/PA/3	Universal	
14 mm Block Adaptor ..	IT/PA/4		
16 mm " " ..	IT/PA/5		
18 mm " " ..	IT/PA/6		
BMC Top Elbow Adaptor ..	IT/PA/7		Supplied at extra cost
Oil Temp. Hose " ..	IT/PA/8	Universal	
Oil Temp. Engine " ..	IT/PA/9	BMC 'A' and Mini	

Unless specified otherwise IT/PA/1 adaptor supplied with Temp. gauge

Packing Data

	Single gauge	Combined gauge	Ammeter
Size	2" x 2 $\frac{1}{2}$ " (50 mm x 56 mm)	2" x 2 $\frac{1}{2}$ " (50 mm x 56 mm)	2" x 2 $\frac{1}{2}$ " (50 mm x 56 mm)
Packing	Carton 4 $\frac{1}{2}$ x 4 x 2 $\frac{1}{2}$ " (114 x 100 x 64)	Carton 5 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x 4 (140 x 64 x 100)	Carton 3 x 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ " (64 x 56 x 56)
Weight	9 ozs., 250 gr.	11 ozs., 310 gr.	4 ozs., 110 gr.
Display	Showcard	Showcard	Showcard

● 12 Months Guarantee ●

P.T.O. ▶

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

ELECTRONIC REVCOUNTER

INSTRUMENTS & PANELS



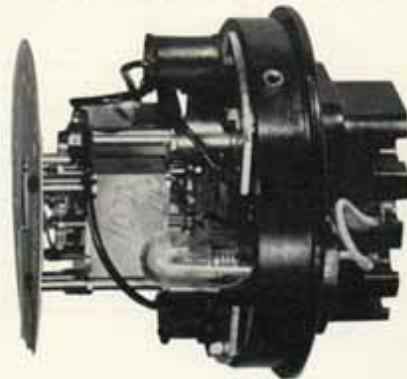
**The best instrument
of its type
in the world**

The Speedwell electronic rev counter offers you unequalled accuracy of rpm measurement simply by connecting three wires. Its clear white pointer follows the

engine revs accurately and instantly, virtually without swing or overshoot. Only the Speedwell tachometer provides such accuracy.

Based on a Weston meter movement of the highest quality, resistant to vibration and accidental knocks, the meter is dustproof and fitted with internal illumination. The electronic circuit is fully compensated against changes in temperature and voltage of the vehicle battery.

Connected to low voltage side of ignition coil and to chassis, current to operate the meter is taken from the vehicle battery at about 1/40th of an amp. The impulse driving the electronic circuit is taken from the back-voltage produced in the low tension winding of the coil when the contact breaker points open. This is normally wasted energy dissipated between the contact points and the condenser, tapping a microscopic amount off to the tachometer. This in no way interferes with the operation of the ignition circuit.



Models are available covering 12 volt and 6 volt systems of positive or negative battery earth, 4 and 6 cylinders and 0-8,000 or 0-10,000 rpm scalings.

The instrument may be mounted in a 3 1/2" or 4" hole. In the latter case, a matching black anodised bezel brings up the diameter to 4 1/4". Chrome plated screw-clamps and a 4 1/2' wire loom are supplied with each instrument.

● 12 Months Guarantee ●

P.T.O. ▶



Specification

Meter	3" dial, 3 1/2" panel aperture, 3 1/2" depth 270° pointer movement. Individually calibrated. Aircraft standard.
Circuit	Operated from primary of coil. Temperature compensated. Voltage compensated. Encapsulated in resin.
Accuracy	± 2% of full scale.

Order Reference

<i>Cat. No.</i>	<i>Volts</i>	<i>Cylinders</i>	<i>Scale</i>
IT/TC4/12	12	4	8,000 rpm
IT/TC4/6	6	4	8,000 "
IT/TC4/12-0	12	4	10,000 "
IT/TC6/12	12	6	8,000 "

Packing Data

Size	5 1/2" x 5 1/2" x 5 1/2" packed (135 x 135 x 135 mm)
Packing	Carton and Corrugated Paper
Gross Weight	2 lbs. 2 ozs. (0.965 Kg)
Display Material	Showcard

Special Models are available for various other samples of RPM, number of cylinders details on request.

● 12 Months Guarantee ● Speedwell Performance Conversions Ltd., London, England

ADJUSTABLE RECLINING SEAT FOR MINI

The most important factor in comfortable and relaxed driving is to be firmly held in a correctly positioned seat with adequate support. This applies especially to the front seat passenger who does not have a steering wheel to hold, and under rigorous cornering even the driver needs good support.

Here is the ideal replacement of the original Mini seats, which are not always suitable. The Speedwell seats whilst having all the advantages of the normal bucket type enable the back rake to be adjusted through 30°. By a conveniently positioned control knob, positive selection of seat angle to suit all positions can be obtained. Adjustment can be made whilst driving.

The mounting bracket has three positions which in conjunction with the normal adjustment lever give nine different fore and aft settings. This represents a total movement of 7" (17.5 cm) to suit all builds. The seat tips forward in the same way as the original seat to gain access to the rear.

The strongly made tubular steel frame is carefully padded and covered by top quality black leather cloth. The seat squab can be removed for cleaning.

The seat is suspended by a 1/2" thick moulded rubber diaphragm which is the latest development in vehicle seating technique. The shape and height of the seat is designed to give adequate thigh support.

Equally suitable for driver or passenger these seats give real luxury normally associated only with more expensive cars.



● 12 Months Guarantee ●

P.T.O. ▶

RALLY SEAT

The rally seat is ideal for both racing and touring. Developed with the close co-operation and assistance of leading competition drivers this comfortable seat is both ideal for long distance driving and competition.

Designed to hold firmly yet giving the comfort required because it gives support in the small of the back and thighs. The shell is made of Polyester glass fibre reinforced with steel plates to carry the stresses to the steel mounting frame. This combination ensures an extremely strong structure which is then padded with a combination of plastic and rubber foam with a covering of best quality black leather cloth.



	Rally seat dimensions
Height	22"
Squab length	20"
Width	14 1/2"
Net weight	13 1/2 lbs.

	Reclining seat dimensions
Height	27"
Width	20"
Net weight	20 lbs.

Order Reference

<i>Description</i>	<i>Cat. No.</i>	<i>Packing Data</i>
Mini reclining seat RH	BP/STR/A1	Size: 30" x 22" x 26" (76 x 56 x 66 cm)
" " " LH	*BP/STL/A1	Gross weight: 28 lbs. (12.7 kilos)
Rally seat universal (no fittings)	BP/ST.1	Size: 30" x 22" x 26" (76 x 56 x 66 cm)
Rally seat Sprite	BP/ST/A5	Gross weight: 24 lbs. (10.9 kilos)

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

**LIGHT-ALLOY
WOOD RIMMED STEERING WHEELS**

SPEEDWELL

ACCESSORIES



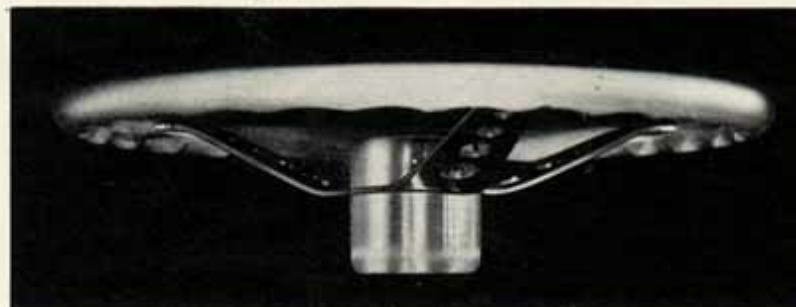
The steering wheel is surely one of the most important items in a motor car—it should be given much thought and planning—be pleasant to handle and at the same time give the car character and style. On the whole the vehicle manufacturer tends to overlook this need and the fastidious owner has created a demand for a better wheel.

The Speedwell range of light alloy steering wheels has been designed for the connoisseur driver. The laminated beech rim is not too thin—nor is it too thick either and after 3 - 4 hours driving the hands are not aching or sore. The alloy spokes are not just inserted—there is steel all the way round for maximum safety. All exposed metal edges are polished and smooth.

All wheels are supplied with hubs which in most cases accept original horn button arrangement.

● 12 Months Guarantee ●

P.T.O. ▶



SPECIFICATION

Rim of laminated beech — Dural spokes pierced or slotted and hand polished — Alloy hubs splined to accept original column.

Order Reference

<i>Vehicle Type</i>	<i>Cat. No.</i>	<i>Remarks</i>
Austin A.40 Mk.1/A.35	SW.3.A2	15" Dished
" Mini/Cooper/'S'	SW.3.A1	15" Flat
Austin-Healey Sprite & Midget	SW.3.A5	15" Dished
" " 100/6 - 3000	SW.3.C1	15" Dished non-adjustable
Fiat 600	SW.3.A.40	15" Dished
Ford Cortina	SW.3.A8	15" "
" Anglia 105E	SW.3.A7	15" "
MGA 1600	SW.3.A10	15" "
MGB	SW.3.A10/1	15" "
Morris 1000	SW.3.A.15	15" "
Morris-Austin MG. 1100	SW.3.A.11	15" "
Renault Dauphine	SW.3.A.30	15" "
" Floride/Caravelle	SW.3.A.30	15" "
Riley 1.5/Wolseley 1500	SW.3.A.20	15" "
Sunbeam Rapier/Alpine		
Hillman Minx	SW.3.A.21	15" "
Hillman IMP	SW.3.A.27	15" "
Saab 93/96	SW.3.A.60	15" "
Triumph, Herald/Vitesse		
Spitfire/TR.4	SW.3.A.23	15" "

Packing Data

Dimensions Packed	16" x 16" x 4½-5"	(405 mm x 405 mm x 127 mm)
Weight	from 2½ lbs to 3½ lbs	(1.25-1.70 kg)

SPEEDWELL PERFORMANCE CONVERSIONS LTD., London, England

● 12 Months Guarantee ●

BMC SPRITE and MG MIDGET RACING ENGINE 1082 AR.5

SPEEDWELL

COMPLETE ENGINES

Speedwell GT Competition Engine

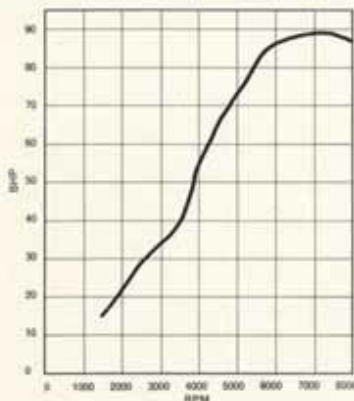
This power unit was specially developed and homologated for the Speedwell GT car. Sprite and Midgets fitted with this engine can race in International G.T. events as a Speedwell G.T.

General Description

The heart of the 1082 AR.5 engine is a cylinder block with the bores enlarged by a special process to 67.7 mm. which is the largest size possible with complete reliability. As well as a piston area increase of 16% this also results in a favourable bore to stroke ratio. Specially forged solid skirt pistons of advanced design ensure that these engines do not suffer from the defects common with amateur attempts of enlarging capacity. A Nitralloy crankshaft is fitted with a steel main bearing cap permitting reliable operation at very high r.p.m.

The Speedwell Clubman Light Alloy cylinder head plays a large part in producing the remarkable power output. Exceptionally efficient combustion chamber shape together with optimum valve sizes, airflow porting and 11:1 compression ratio results in excellent volumetric and thermal efficiency. Vital components of the valve train, camshaft, rocker gear, valve caps and springs are all Speedwell products designed to work together providing effective valve operation up to 8,000 r.p.m. with minimum stress. Extensive testing has shown the famous Weber 45 DCOE racing carburettor specially jetted provides the most perfect carburation for this application. All rotating and reciprocation parts are balanced, lightened, strengthened or replaced and the entire engine is carefully and methodically assembled to a standard obviously unobtainable in mass production. The final result is a smooth and reliable power unit which will not disappoint its fortunate owner.

An engine of this type powered the fastest Sprite ever road tested, of which John Bolster, Autosport said, "I covered many miles at a genuine 100 m.p.h." and "I came to the conclusion that Speedwell have all the answers where the small B.M.C. engine is concerned. You certainly can't break it because I've tried". See also Road Test Section.



Specification

Large Bore Block	Special Camshaft	45 DCOE 9 Weber
Forged Solid Skirt Pistons	Double Valve Springs	Bosch Distributor
Balanced and crack tested con rods	KE Inlet and Exhaust Valves	Bosch Coil
Balanced Nitralloy Crankshaft	Balanced and lightened Flywheel	Polished Inlet Manifold
Oil Pump	Steel Main Bearing Cap	Plated Rocker Cover
High Lift Rocker Gear	Clubman Alloy Cylinder Head	Exhaust System
		Gaskets, badges, plugs, etc.

Modifying Customers Engine

When customer's existing engines are modified, worn components may need replacing and will be charged at manufacturers list price, oils, etc. are extra. See order reference below.

Order Reference

Description	Cat. No.	Size	Weight
Complete Engine 1082 AR.5	CE.300	Packed 30" x 30" x 36"	Nett 140 lb. 86 kg.
Modifying existing unit	CEW.306		
Complete 998 c.c. AR.5	CE.325	76 x 76 x 91 cm	Gross 225 lb. 102 kg.
Modifying existing unit	CEW.331		

Packing Data

Speedwell Performance Conversions Ltd., London, England

BMC - ELF - COOPER - MINI - 1100

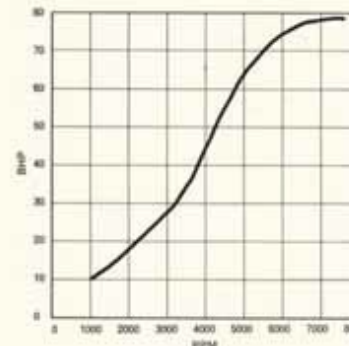
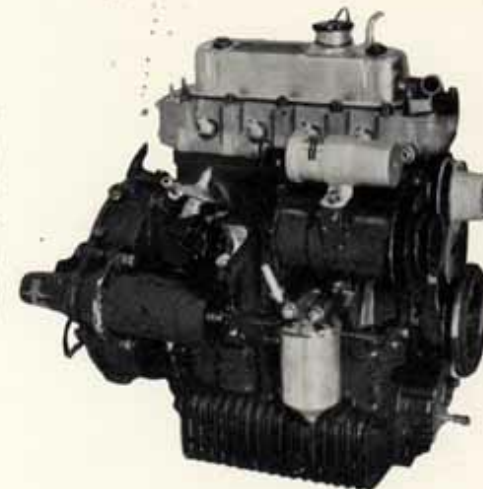
SPEEDWELL

COMPLETE ENGINES

SPECIFICATION 1082 TT.5

An alternative large bore engine

The 1082 engine is similar in all respects to the 1152 TT5 except that a 76.2 mm stroke crankshaft is used. This results in a power unit of performance only slightly below that of the 1152 TT5, at somewhat lower cost. The exact saving depends upon which standard engine is to be modified and can be obtained using the order reference.



Power Data

Maximum B.H.P.	79 at 7,200 r.p.m.
Maximum Torque	66 at 5,000 r.p.m.
Torque at 3,000 R.P.M.	50 lbs - ft.
Maximum R.P.M. Momentary	7,500
Maximum R.P.M. Sustained	7,000

Order Reference Modifications based on any of the following vehicles:

Description	997 cc Cooper	998 cc Cooper	848 cc Mini '63	848 cc Mini '64	998 cc Elf, etc	1098 cc "1100"
Complete 1082 TT.5 Engine with Transmission	CE.200/1C	CE.200/2C	CE.200/1	CE.200/1/11	CE.200/E	CE.200/11
Engine Core (No transmission)	C.E202/1C	CE.202/2C	CE.202/1	CE.202/1/11	CE.202/1E	CE.202/11
Block Core	CE.204/1C	CE.204/2C	CE.204/1	CE.204/1/11	CE.204/1E	CE.204/11
Modifying Existing Unit	CEW.206/1C	CEW.206/2C	CEW.206/1	CEW.206/1/11	CEW.206/1E	CEW.206/11

Packing Data

Description	Nett Weight	Gross Weight	Size Cased
CE.200/1C	375 lb 170 kg	410 lb 186 kg	2' 6" x 2' 6" x 3'
CE.202/1C	190 lb 86 kg	225 lb 102 kg	76 x 76 x 91.5 cm
CE.204/1C	135 lb 61 kg	170 lb 77 kg	25" x 29" x 20"
			63.5 x 74 x 51 cm

Speedwell Performance Conversions Ltd., London, England

Cooper - Elf - Mini - 1100 SPECIFICATION 1152 TR.5

SPEEDWELL

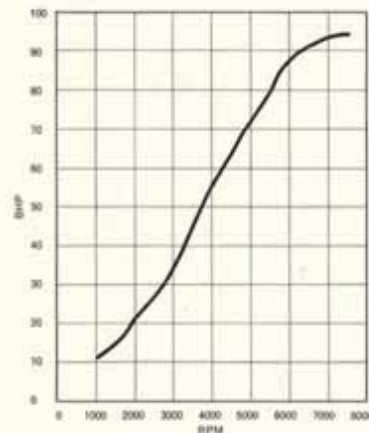
COMPLETE ENGINES

90 BHP Racing and Road Engine

The 1152 Racing engine is a further development of the 1152 TR.5 for racing under Group III Appendix J, FIA regulations. Although a racing engine this unit retains flexibility to a remarkable degree making it suitable for sporting road use. It differs from the 1152 TR.5 mainly in the shape and dimensions of the cylinder head and porting, valve gear, and exhaust system. Lightening, matching and polishing is taken to the ultimate degree. The tubular exhaust manifold which is of complex shape, exactly matches the requirements of this particular engine specification and works in conjunction with a special exhaust pipe and silencer.

Every engine is fully run in under carefully controlled conditions, tuned to perfection and power tested on the Speedwell dynamometer. A complete set of performance curves are supplied with each engine.

An engine of this type powered the sensational Speedwell Riley Elf of which the Autocar Road Testers wrote "The fastest Mini (and fastest Riley) we have ever tested, with a best one way



Power Data

Maximum b.h.p. 94 b.h.p. at 7,500 r.p.m.
 Maximum torque 77 lb./ft. at 5,800 r.p.m.
 Torque at 3,000 r.p.m. 61 lbs./ft.
 Maximum r.p.m. momentary 7,500
 Maximum r.p.m. sustained 7,500

maximum of 110 m.p.h. backed up by a mean of 109 m.p.h. . . . and acceleration is of the earnest kick-in-the-back variety: 0-90 m.p.h. in 19.6 secs. Overall fuel consumption for 509 miles, 32.2 mp.g. (6.8 litres/100 km.)" Autocar December 1963.

This engine can be purchased as a complete unit or the customer's own engine can be modified.

In the latter case worn components may need replacing and will be charged at manufacturers list price, oils, etc. are extra. 1152 engines can also be produced from other power units in the Mini range in which case certain additional components will be required. See order reference overleaf.

To meet the requirements of various capacity classes "TR.5" engines similar to the 1152 can be made in other sizes. Type 1082 TR.5 uses a crankshaft with a stroke of 76.2 mm. and type 1182 TR.5 a stroke of 83.7 mm. These and all special racing requirements should always be discussed with Speedwell's Technical Department.

Order Reference Modifications based on any of the following vehicles

Description	997 cc Cooper	998 cc Cooper	848 cc Mini '63	848 cc Mini '64	998 cc Elf, etc.	1,098 cc "1100"
Complete 1152 TR.5 Engine with Transmission	CE.125/1C	CE.125/2C	CE.125/1	CE.125/II	CE.125/1E	CE.125/11
Modifying existing unit	CEW.131/1C	CEW.131/2C	CEW.131/1	CEW.131/II	CEW.131/1E	CEW.131/11
Complete 1082 TR.5 Engine with Transmission	CE.225/1C	CE.225/2C	CE.225/1	CE.225/II	CE.225/1E	CE.225/11
Modifying existing unit	CEW.231/1C	CEW.231/2C	CEW.231/1	CEW.231/II	CEW.231/1E	CEW.231/11
Complete 1182 TR.5 Engine with Transmission	CE.175/1C	CE.175/2C	CE.175/1	CE.175/II	CE.175/1E	CE.175/11
Modifying existing unit	CEW.181/1C	CEW.181/2C	CEW.181/1	CEW.181/II	CEW.181/1E	CEW.181/11

Packing Data

Description	Nett Weight	Gross Weight	Size Cased
CE.175/1C	375 lb 170 kg	410 lb 186 kg	30" x 30" x 36" 76 x 76 x 91 cm

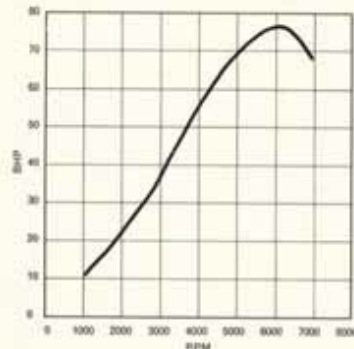
SPECIFICATION 1182 TT.5

COMPLETE ENGINES

The Ultimate in Flexible Power

The 1182 engine is similar in all respects to the 1152 TT5 except that a 83.7 mm stroke crankshaft and a different camshaft are used. This is the logical large capacity modification to the 1098 cc engine of the "1100" cars.

In this conversion, maximum horsepower is deliberately restricted by selection of camshaft characteristics in order to obtain exceptional torque between 2000 and 4000 r.p.m. This gives an engine best in keeping with the weight and general nature of the 1100 cars when pulling an extra-high final-drive ratio, a highly desirable extra. With a top gear of 16.4 m.p.h. per 1000 r.p.m., a flat and level maximum of about 96 m.p.h. is obtained at only 5800 r.p.m. As with other high-g geared cars, maximum speed is rather indeterminate and only slightly favourable conditions are required to show 100 m.p.h., still at only 6100 r.p.m. With a Speedwell oil-cooler to look after oil-temperature it is possible to cruise at 90 m.p.h (5500 r.p.m.) for long periods. In spite of the high gearing, acceleration through the gears is still very brisk 0-60 taking only 13 seconds. Thanks to the high torque at low engine r.p.m. fixed gear acceleration in the normal town-driving range is exceptional. The 1182 transformation can also be applied to the engines of other models where these pleasing characteristics are desired.



Specification

- Large Bore Block with Steel Main Bearing Cap
- Solid-skirt, flat top pistons
- Special Racing quality Oil-pump
- Clubman Alloy Cylinder Head
- Lightened and balanced rotating parts
- Valves in KE 965 Steel (1½" inlets)
- H4 SU Carburettor Set
- Double Valve Springs
- Polished Inlet Manifold
- High-Lift Rocker Gear
- Tubular Exhaust Manifold
- Special Camshaft
- Supertone Exhaust Silencer
- Cooper-type connecting rods, crack-tested and balanced

Outputs from Dynamometer tested engines

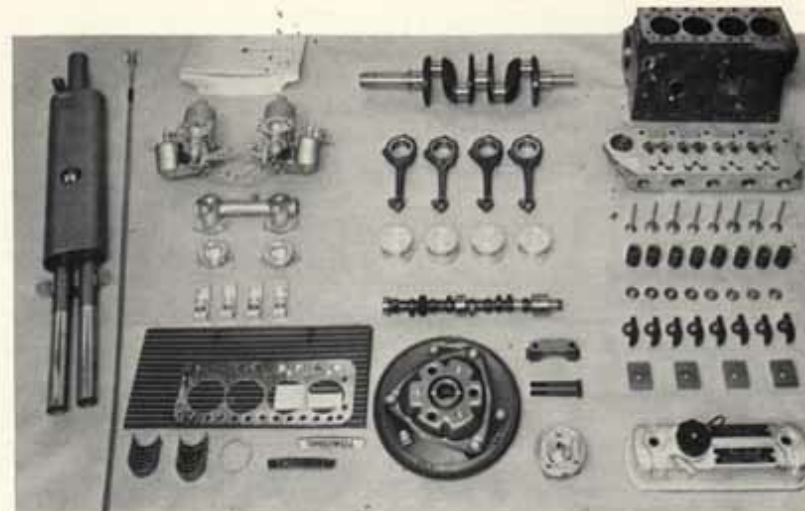
Maximum power	75 BHP at 6000 rpm
Maximum torque	73 lbs - ft at 4500 rpm
Torque at 3000 rpm	67 lbs - ft
Maximum rpm momentary	7000
Maximum rpm sustained	6500

Order Reference Modifications based on any of the following vehicles:

Description	997 cc Cooper	998 cc Cooper	848 cc Mini '63	848 cc Mini '64	998 cc Elf, etc.	1098 cc "1100"
Complete TT5 Engine with Transmission	CE.150/1C	CE.150/2C	CE.150/1	CE.150/1/II	CE.150/E	CE.150/11
Engine Core (No transmission)	CE.152/1C	CE.152/2C	CE.152/1	CE.152/1/II	CE.152/1E	CE.152/11
Block Core	CE.154/1C	CE.154/2C	CE.154/1	CE.154/1/II	CE.154/1E	CE.154/11
Modifying Existing Unit	CEW.156/1C	CEW.156/2C	CEW.156/1	CEW.156/1/II	CEW.156/1E	CEW.156/11

Packing Data

Description	Nett Weight		Gross Weight		Size Cased
	lb	kg	lb	kg	
CE.150/1C	375	170	410	186	2' 6" x 2' 6" x 3' 76 x 76 x 91.5 cm
CE.152/1C	190	86	225	102	25" x 29" x 20" 63.5 x 74 x 51 cm
CE.154/1C	135	61	170	77	



Specification

- Large bore block
- Forged Solid-Skirt Pistons
- Balanced and crack-tested con-rods
- Balanced crankshaft
- Balanced and lightened flywheel
- Steel Main Bearing Cap
- Clubman Alloy Cylinder head
- Racing-type Oil pump
- High-Lift Rocker Gear

Special Camshaft

- Double Valve Springs
- KE965 Inlet and Exhaust Valves
- Twin 1½" S.U. Carburettors
- Air bells
- Polished inlet manifold
- Plated Rocker Cover
- Supertone Silencer
- Gaskets, badges, plugs, etc.

Power Data

Maximum b.h.p.	82 b.h.p. at 6,800 r.p.m.
Maximum torque	72 lbs./ft. at 5,000 r.p.m.
Torque at 3,000 r.p.m.	62 lbs./ft.
Maximum r.p.m. momentary	7,500
Maximum r.p.m. sustained	7,000

Modifying Customer's Engine

When customer's existing engines are modified, worn components may need replacing and will be charged at manufacturers list price, oils, etc. are extra. 1152 engines can also be produced from other power units in the Mini range in which case certain additional components will be required. See order reference below.

Order Reference

Description	997 c.c. Cooper	998 c.c. Cooper	848 c.c. Mini '63	848 c.c. Mini '64	998 c.c. Elf, etc.	1,098 c.c. "1100"
Complete/TT.5 Engine with Transmission	CE.100/1C	CE.100/2C	CE.100/1	CE.100/1/II	CE.100/1E	CE.100/11
Engine Core (No transmission)	CE.102/1C	CE.102/2C	CE.102/1	CE.102/1/II	CE.102/1E	CE.102/11
Block Core	CE.104/1C	CE.104/2C	CE.104/1	CE.104/1/II	CE.104/1E	CE.104/11
Modifying existing unit	CEW.106/1C	CEW.106/2C	CEW.106/1	CEW.106/1/II	CEW.106/1E	CEW.106/11

Packing Data

Description	Nett Weight		Gross Weight		Size Cased
	lb	kilos	lb	kilos	
CE.100/1C	375	170	410	186	2' 6" x 2' 6" x 3' 76 x 76 x 91.5 cm
CE.102/1C	190	86	225	102	25" x 29" x 20" 63.5 x 74 x 51 cm
CE.104/1C	135	61	170	77	

SPECIFICATION 1152 TT.5

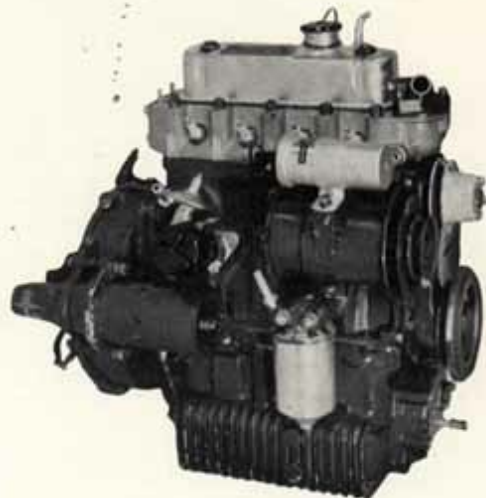
COMPLETE ENGINES

The Ultimate in Road Performance

In the ultimate stages of performance conversion so many components are modified or replaced and assembly becomes such a precise operation that the use of a "Kit" becomes impracticable. The only satisfactory method is a complete engine transformation carried out at the Speedwell Centre.

It has always been the aim of engine designers to produce high specific power output in conjunction with acceptable flexibility, a far more difficult task than producing high power alone as in racing engines. The Speedwell TT.5 engines come nearer to this ideal combination than any other contemporary power unit. The feel of such phenomenal power in a light vehicle such as the Mini needs to be experienced to be believed. Even the hardened road-testers of the national motoring press were unanimous in their enthusiastic acclaim—"Fastest Mini yet tested by the Motor" (Max. 107 m.p.h. mean 104 m.p.h.) "Ninety m.p.h. is a natural cruising speed. 0-90 in 25.5 secs." Motor December 1963.

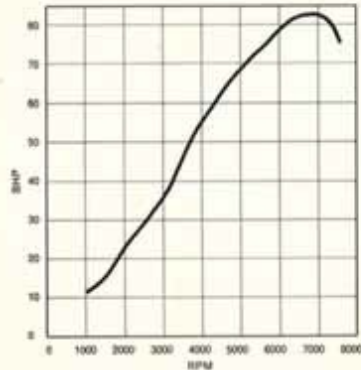
The 1152 TT.5 engines are available as complete power units for outright purchase or customers existing engines can be modified. For the convenience of overseas customers block cores or assembled engine cores can be supplied.



General Description

The heart of the 1152 TT.5 engine is a cylinder block with bores enlarged by a special process to 67.1 mm. which is the largest size possible with complete reliability. This results in a piston area increase of 16% and a favourable bore to stroke ratio. Specially forged solid-skirt pistons of advanced design ensure that these engines do not suffer from the defects common with amateur attempts at enlarging capacity. The 81.3 mm. stroke Cooper crankshaft of proven strength and reliability is used.

The Speedwell Clubman Light Alloy cylinder head plays a large part in producing the exceptional power output. An exceptionally efficient combustion-chamber shape together with optimum valve sizes, airflowed porting and 11:1 compression ratio results in excellent volumetric and thermal efficiency. Vital components of the valve-train, camshaft, rocker gear, valve caps and springs are all Speedwell products designed to work together providing effective valve operation up to 7,500 r.p.m. with minimum stress. Extensive testing has shown the H4 S.U. to provide the most perfect carburation for this application. All rotating and reciprocating parts are balanced, lightened, strengthened or replaced and the entire engine is carefully and methodically assembled to standards obviously unobtainable in mass production. The final result is a smooth and reliable power unit which will not disappoint its fortunate owner.



P.T.O. ▶

**BMC MINI COOPER & COOPER S
RACING ENGINES 970—1275 cc**

COMPLETE ENGINES

Group II Racing

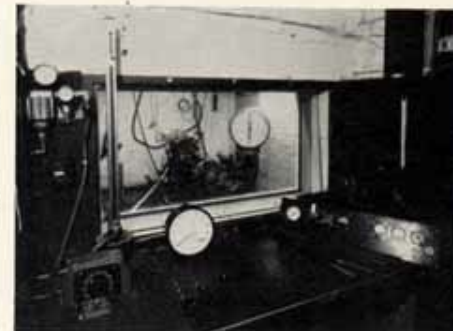
Touring car racing is governed by the F.I.A. Regulations and the various categories or "groups" are laid down in what is generally known as Appendix J.

Group II (Improved Touring cars) regulations govern Saloon Car International races and rallies. Very few changes are permitted, the exceptions being:—

Modifying by the removal of metal, lightening, polishing, grinding, etc. any existing component. Balancing of moving parts. Replacement of any spring, alteration of carburetors jetting and in some cases the size. Make of ignition equipment and silencer.

It is not permitted to:

Add any metal by welding etc. Substitute any non-standard part unless Homologated by the manufacturers.



Group III Racing

Club races and other non-international events are frequently run under Group III or IV. In these categories there are no restrictions on engine modifications, other than capacity classes, and Speedwell special components can be used to obtain higher power outputs. A Speedwell Group III Racing Specification TR.5 uses the racing version of the Alloy cylinder head, complete special valve gear including camshaft, high lift rockers, valves, springs and caps, special exhaust system and Amal, S.U. or Weber carburetors, according to requirements. Large bore versions of these engines are described on page F.4.

Speedwell Racing Engines

All the modifications that can be carried out are incorporated in the Speedwell specification. Each engine is of course completely stripped down and each component is inspected for possible flaws before being modified in accordance with the latest techniques. The power unit is then assembled with meticulous care and prepared for running in. Each engine is run-in with progressively increasing loads for 6-12 hours on a dynamometer test bench. Final tuning and adjustments are then carried out with the entire engine, including its exhaust system exactly as it will be fitted in the car. Carburation and ignition having been perfected, a set of power curves are taken—the engine is now ready to race.

The engines can be supplied outright or the work can be carried out on an existing unit. Customers are advised to consult with the Technical Dept. and discuss their exact requirements as the characteristics of these engines can be adjusted for circuit racing or rallying.

Power Output	997 cc Cooper	997 cc Cooper	1,071 cc Cooper S
	Group II	Group III	Group II
Max. b.h.p.	72 at 7200	82 at 7200	90 at 7500
Max. torque lbs./ft.	60 at 5500	69 at 5000	70 at 5000

ORDER REFERENCE

Description	997 cc Cooper	998 cc Cooper	970 cc Cooper S	1071 cc Cooper S	1275 cc Cooper S
Complete Group II Engine with Transmission	CE.275/1C	CE.275/2C	CE.275/1CS	CE.275/2CS	CE.275/3CS
Modifying existing unit	CEW.281/1C	CEW.281/2C	CEW.281/1CS	CEW.281/3CS	CEW.281/3CS
Complete Group III Engine TR.5 with Transmission Modifying existing unit	CE.250/1C CEW.256/1C	CE.250/2C CEW.256/2C	CE.250/1CS CEW.256/1CS	CE.250/2CS CEW.256/2CS	CE.250/3CS CEW.256/3CS

Packing Data

Description	Nett Weight	Gross Weight	Size Cased
CE.250/1CS etc.	375 lb. 170 kg.	710 lb. 186 kg.	30" x 30" x 36" 76 x 76 x 91 c.m.

Speedwell Performance Conversions Ltd., London, England



ROOF LAMPS

The Johnson Roof Spotlight gives 360° visibility enabling the motorist and rallyist to quickly locate road signs, turnings, road forks, even in the worst possible weather conditions. Well designed—the housing is a solid die-cast zinc, cast with a cowl to prevent unwanted glare and is then chromed to the highest standards. The reflector is coated in a special vacuum aluminium process. The black bakelite handle is shaped to afford a comfortable grip and incorporates a push-pull switch. It is readily accessible to either the driver or front passenger but still only projecting 4½" into the car. The Johnson Roof Lamp is easily fitted with the aid of full instructions and drilling pattern. When installed there is no unsightly wiring exposed. Supplied complete with bulb.

REVERSING LAMP

Also included in the Johnson range, the reversing lamp has the same high quality finish with a clear simplicity of design. Brass casing heavily chromed, fluted lens with a universal attachment to enable the lamp to be mounted in a hanging or upright position. An absolute necessity for all motorists. Supplied complete with fixing bracket, nuts, bolts and wiring.



● 12 Months Guarantee ●

P.T.O. ▶

HEADLAMP FLASHER SWITCH

A finger control headlamp flasher or auxiliary horn button. Spring loaded, self-returning arm suitable for steering column or dashboard mounting. Very easy to operate without removing the hands from the steering wheel. Supplied complete with bracket



and short length of wire, chrome 8½" stalk and ivory button.

The headlamp flasher, which can also be used to operate the horns, is one of the most important accessories for safer day or night driving. Without taking his hands from the wheel—the driver can flash his lights when pulling out to over-take, going

round a corner, approaching cross-roads or any other occasion when visible warning is necessary. The switch is spring loaded and will make contact at a light finger touch. It can be easily fitted on steering column or dash by means of a simple bracket provided. Suitable for either 12 volt or 6 volt system. (A relay is required for 6 volt operation).



Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Johnson Roof Lamp	AC.50	14" x 7" x 5" (35.5 x 17.7 x 12.7 cm)	3 lbs. 1.3 kg
Johnson Reversing Lamp	AC.55	7" x 4" x 4" (17.7 x 10 x 10 cm)	1 lb. .45 kg
Headlamp Flasher Switch	AC.40	10" x 2" x 1" (25.4 x 5.8 x 2.5 cm)	3 ozs. 86 gr
Relay 6/12 volt	AC.36	3" x 3" x 3" (7.6 x 7.6 x 7.6 cm)	4 ozs. 115 gr

All units supplied for 12 volt system—if other voltages required affix after Cat. No., i.e. AC.50/6 (6v. Roof Lamp).

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

DASH PANELS and MOUNTING BRACKETS

SPEEDWELL

INSTRUMENTS and PANELS



ITP/30/2 fitted to Mini.

To enable Speedwell instruments to be mounted with an attractive and professional appearance a complete range of dash panels and mounting brackets are available.

MINI DASH PANELS

The Speedwell full width wooden dash panel is suitable for all Austin and Morris Minis and is very attractively finished in polyester surfaced sapele veneer. This gives an extremely attractive high gloss which does not fade, scratch or chip and can be kept in excellent condition with the minimum of maintenance.



The dash panel is easily fitted, two self-tapping screws holding it firmly in place. It allows the speedometer to be used in its standard position and by virtue of the special design the use of the parcel shelf is retained. The dash panel is drilled with two 2" holes to accommodate the Speedwell instruments,



but can be supplied plain where instruments are not required. A cheaper version is available in wood-grain plastic faced hardboard.



SPEEDWELL REV COUNTER PANEL

This is a fibreglass moulded panel which has a slightly angled face enabling the rev counter to be easily and quickly read. Completely universal it is possible to fit it in any make of car. The panel is finished in Grey primer which can be finished in any colour.

INSTRUMENT BRACKETS

A simpler method of fixing instruments is provided by two types of fixing bracket, the first clamping onto the steering column (more suitable for older cars) and the second for use on the top or bottom of the panel shelf of facia. These brackets are made of light alloy with a black crackle finish.



Order Reference

Specification

Packing Data

Type	Cat. No.	Material	Size	Weight
Mini Dash (plain)	ITP/30	Wood-sapele veneer	8" x 46" x 1/4"	1 1/2 lb.
" " (2 holes)	ITP/30/2	Wood-sapele veneer	20.32 x 116.84 x .032 cm	563 gr.
" " (4 holes)	ITP/30/4	Wood-sapele veneer		
" " (plain)	ITP/26	Hardboard plastic face		
" " (2 holes)	ITP/27	Hardboard plastic face		
Revcounter panel	ITP/10	Fibreglass	4 1/2" x 6" x 3"	1/2 lb.
			11.43 x 15.24 x 7.62 cm	112 gr.
Dash bracket	ITP/15	Light alloy	2" x 2" 5.08 x 5.08 cm	1 1/2 ozs. 35 gr.
Steering column bracket	ITP/16	" "	6" x 2" 15.24 x 5.08 cm	3 ozs. 84 gr.

● 12 Months Guarantee ●

P.T.O. ▶

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

DASH PANELS and MOUNTING BRACKETS

SPEEDWELL

INSTRUMENTS and PANELS



ITP/30/2 fitted to Mini.

To enable Speedwell instruments to be mounted with an attractive and professional appearance a complete range of dash panels and mounting brackets are available.

MINI DASH PANELS

The Speedwell full width wooden dash panel is suitable for all Austin and Morris Minis and is very attractively finished in polyester surfaced sapele veneer. This gives an extremely attractive high gloss which does not fade, scratch or chip and can be kept in excellent condition with the minimum of maintenance.



The dash panel is easily fitted, two self-tapping screws holding it firmly in place. It allows the speedometer to be used in its standard position and by virtue of the special design the use of the parcel shelf is retained. The dash panel is drilled with two 2" holes to accommodate the Speedwell instruments, but can be supplied plain where instruments are not required. A cheaper version is available in wood-grain plastic faced hardboard.



The dash panel is easily fitted, two self-tapping screws holding it firmly in place. It allows the speedometer to be used in its standard position and by virtue of the special design the use of the parcel shelf is retained. The dash panel is drilled with two 2" holes to accommodate the Speedwell instruments, but can be supplied plain where instruments are not required. A cheaper version is available in wood-grain plastic faced hardboard.

● 12 Months Guarantee ●

P.T.O. ▶



SPEEDWELL REV COUNTER PANEL

This is a fibreglass moulded panel which has a slightly angled face enabling the rev counter to be easily and quickly read. Completely universal it is possible to fit it in any make of car. The panel is finished in Grey primer which can be finished in any colour.

INSTRUMENT BRACKETS

A simpler method of fixing instruments is provided by two types of fixing bracket, the first clamping onto the steering column (more suitable for older cars) and the second for use on the top or bottom of the panel shelf of facia. These brackets are made of light alloy with a black crackle finish.



Order Reference Specification Packing Data

Type	Cat. No.	Material	Size	Weight
Mini Dash (plain)	ITP/30	Wood-sapele veneer	8" x 46" x 1/2"	1 1/2 lb.
" " (2 holes)	ITP/30/2	Wood-sapele veneer	20.32 x 116.84 x .032 cm	963 gr.
" " (4 holes)	ITP/30/4	Wood-sapele veneer		
" " (plain)	ITP/26	Hardboard plastic face		
" " (2 holes)	ITP/27	Hardboard plastic face		
Revcounter panel	ITP/10	Fibreglass	4 1/2" x 6" x 3"	1/2 lb.
			11.43 x 15.24 x 7.62 cm	112 gr.
Dash bracket	ITP/15	Light alloy	2" x 2" 5.08 x 5.08 cm	1 1/2 ozs.
				35 gr.
Steering column bracket	ITP/16	" "	6" x 2" 15.24 x 5.08 cm	3 ozs.
				84 gr.

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

SANOR HORNS

ACCESSORIES



AC.TR2

SANOR HORNS

Sanor have specialised in the manufacture of horns for more than thirty years. Today their products are well known all over the Continent, and they supply not only all the most important French motor manufacturers, but the French railways, air lines, navy, fire services, public transport and industry as well. All Sanor Horns are fully guaranteed.

TR2 MAJOR

The TR2 Major lightweight horns have tremendous power and give a sharp melodious blast to give an effective warning. The trumpets are made of plastic, the coil housing of steel. A matched pair consists of one high and one low note horn. The TR2's are intended for under bonnet fitting and a mounting bracket is provided.

J8 MINOR

These high frequency horns give a shrill discordant blast. Their compact size makes them ideal for fitting in small cars with little under-bonnet space.

RALLY DUET

Comprises a small battery driven compressor with twin trumpets, giving high-pitched twin blast. Supplied complete with all necessary brackets, etc.



AC.R10

HORN RELAY

For instant operation and minimum voltage drop it is recommended that a relay is incorporated in the horn operating circuit, suitable either 6 v or 12 v.

Order Reference

Description	Cat. No.	Size	Weight
TR2 Major pair	AC.TR2	5" x 3" 12.7 x 7.6 cm	2½ lb 10.2 kg
J8 Minor pair	AC.J8	3½" x 2" 10 x 5.8 cm	2 lb .9 kg
Rally Duet	AC.R10	Compressor: 2½" x 5"	9 lb 4 kg
Horn relay	AC.36	Trumpet: 3½" x 8½"	

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

SPECIAL ACCESSORIES FOR THE MINI

SPEEDWELL

ACCESSORIES



EXTRA FUEL TANK

For long distance Touring, Racing or Rallies increasing the range between refuelling is very necessary. The Tank is 5 gallons (23 litres), bringing the total fuel capacity to 10 gallons. Its use is permitted in all types of International Races and Rallies. Strongly made in mild steel with external filler. Straightforward fitting with connecting pipe to original tank so that the standard fuel pump and gauge are retained.



MINI DOOR HANDLES

Speedwell were the first to introduce Mini Door Handles and their design has proved to be still the most effective. These are far superior to the vague wire door pulls which are standard fitments for the Mini cars. Our handles provide an ease of operation which even later models do not enjoy. Slightly cranked at an angle to enable the hand to easily find a grip. They are finished in high quality chrome plated steel tubing finished with a soft rubber ferrule.



SUMP GUARD

This heavy gauge metal guard provides good sump protection when driving over unsurfaced roads, forest tracks, etc. Essential for the serious rallyist. The main plate is made of 18 gauge (1.2mm) steel, the mounting brackets of 1/2" steel. There is no interference with oil drainage or the oil cooling properties of the sump. It should be pointed out, however, that with or without a sump guard the serious competition driver should fit an oil cooler. Supplied with all necessary bolts. Also available for Morris Austin and MG 1100.

● 12 Months Guarantee ●

P.T.O. ▶



REMOTE GEAR CHANGE FOR 850 MINI

There are many Mini owners who dislike the original gear change lever and its relatively long travel. This remote gear change conversion provides the answer. It is a properly engineered piece of equipment which replaces the original lever entirely.

The operating mechanism is covered by an attractive moulded fibreglass cover (finished in Black P.V.C. on the de-Luxe model) which also serves to enhance the appearance of the interior. Supplied with comprehensive instructions.

GEAR LEVER EXTENSION

A small chrome plated extension makes gear changing just a little easier and more pleasant.



FLY-OFF HANDBRAKE

Sports car drivers will of course be already familiar with this type of operation whereby the handle button is pushed down to keep the handbrake on, to immediately release when the handle is pulled. This is strictly a competition accessory for driving tests, etc. Simply replaces original lever and fitted in approximately 30 minutes.

ENGINE CONES

These eliminate engine rock and gear lever movement when the clutch is let in due to play in the torque arm rubbers. They are fitted in matter of minutes. Turned from solid steel.

Order Reference

Packing Data

Description	Cat. No.	Size	Gross Weight
Mini Door Handles (pr.)	AC/5/A1	9" x 1" (22.9 x 2.5 cm)	12 ozs. .34 kg
Extra Fuel Tank	AC/4/A1	18" x 18" x 15" (46 x 46 x 38 cm)	14 lbs. 6 kg
Sump Guard	AC/7/A1	20" x 16" x 4" (51 x 41 x 10.1 cm)	10 lbs. 4.6 kg
Sump Guard	AC/7/A11	20" x 16" x 4" (51 x 41 x 10.1 cm)	10 lbs. 4.6 kg
Remote Gear Change kit—std.	AC/20/A1	24" x 18" x 9" (61 x 46 x 22.9 cm)	10 lbs. 4.6 kg
Remote Gear Change kit—de luxe	AC/21/A1	24" x 18" x 9" (61 x 46 x 22.9 cm)	10 lbs. 4.6 kg
Fly-off Handbrake Lever	AC/25/A1	12" x 6" x 2" (31 x 15.2 x 5.1 cm)	3 lbs. 1.36 kg
Engine Cones	AC/2/A1	2" x 1" (5 x 2.5 cm)	1 oz. 57 gr
Gear Lever extension	AC/23/A1	2 1/2" x 1" (6.4 x 2.5 cm)	2 oz. 57 gr

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England

PERSONAL ACCESSORIES

ACCESSORIES



Emergency Tow Rope

This is a light nylon rope supplied neatly packed in a plastic case. Manufactured from woven nylon cord with a special chromed steel quick-release catch, thus avoiding the use of knots. Each end is covered in leather to prevent chaffing

on sharp metal parts. A small red pendant is incorporated to enable the rope to be seen easily. The breaking strain is 1 ton.



Driving Gloves

Well shaped comfortable driving gloves for a sure grip of the steering wheel with soft hog hide palms and string backs for adequate ventilation. State size when ordering.

● 12 Months Guarantee ●

P.T.O. ▶

Racing Mirrors

Used on all leading sports and racing cars, these attractive mirrors are fitted like any other exterior wing mirrors with the additional benefit of a well designed shape to improve air flow and cut down wind noise at high speeds. Solid fixing by two nuts and bolts. The glass is easily adjustable and is available either flat or convex. The Speedmirror is finished in heavily polished chrome. The Racemirror is available with flat glass only to comply with FIA Regulations and has a light alloy case for minimum weight.



Safety Belts

The use of safety harnesses has been pioneered in this country by members of the Speedwell staff. With this long experience of seat belts it has been found that certain types offer greater value and more adequate protection than others. The shoulder harness offers maximum protection. Lap and shoulder straps are manufactured in Terylene webbing and tested to BS 3254. Suitable for sports cars, GT and saloons.



Alternatively, the next best solution is a combined diagonal shoulder and lap belt. This type is the most commonly used today.

Single diagonal belts are not recommended as they do not ensure adequate protection. All seat belts are anchored to the floor with special fittings. Certain cars have fitting

points provided by the manufacturer. Remember that wearing a safety belt does not entitle you to take any risks when driving—but does avoid or reduce injuries that might be sustained in an unavoidable accident.



Order Reference

Packing Data

Description	Cat. No.	Size	Weight
Emergency tow rope	AC.35	10" x 5" x 2" (25.4 x 12.7 x 5 cm)	1 lb. .45 kg
Speedmirror (convex)	AC.51	4½" x 4½" x 4½" (11.4 x 11.4 x 11.4 cm)	2 lb. .9 kg
" " (flat)	AC.51F	" " " " " " "	" " " "
Racemirror (flat)	AC.52F	" " " " " " "	1 lb. .45 kg
Shoulder Harness	AC.60	7" x 7" x 4" (17.7 x 17.7 x 10 cm)	5 lb. 2.2 kg
Lap/diagonal safety belt	AC.61	8" x 7" x 4" (20.3 x 17.7 x 10 cm)	6 lb. 2.7 kg
Driving gloves	AC.66	10" x 6" x 1" (25.4 x 15.2 x 2.5 cm)	½ lb. .22 kg

● 12 Months Guarantee ●

Speedwell Performance Conversions Ltd., London, England



To carry out the extensive research development necessary for the production of soundly engineered speed equipment, Speedwell have installed the most advanced dynamometer test-house in the country.

This installation is available to customers for the following services:—

(1) Engine Testing

Any engine up to 300 horsepower and 12,000 r.p.m. can be tested and curves of brake-horsepower, torque and specific fuel-consumption against r.p.m. supplied. This service, which is quick and reasonable in cost is most valuable to anyone selling or buying a racing car or engine, as an indisputably accurate certificate of maximum brake-horsepower can prevent possible argument and misunderstanding. A unique feature of the Speedwell installation is that engines are tested exactly as fitted to the car, with all accessories including the car exhaust system. The power given is measured at the flywheel and is given both direct (brake-horsepower) and corrected to SAE standard conditions (corrected brake-horsepower). This method takes into account the effect of atmospheric conditions on performance by expressing the power as that which the engine would give when operating in dry air at a temperature of 60 degrees F and a pressure of 29.92 inches of mercury.

(2) Engine Tuning

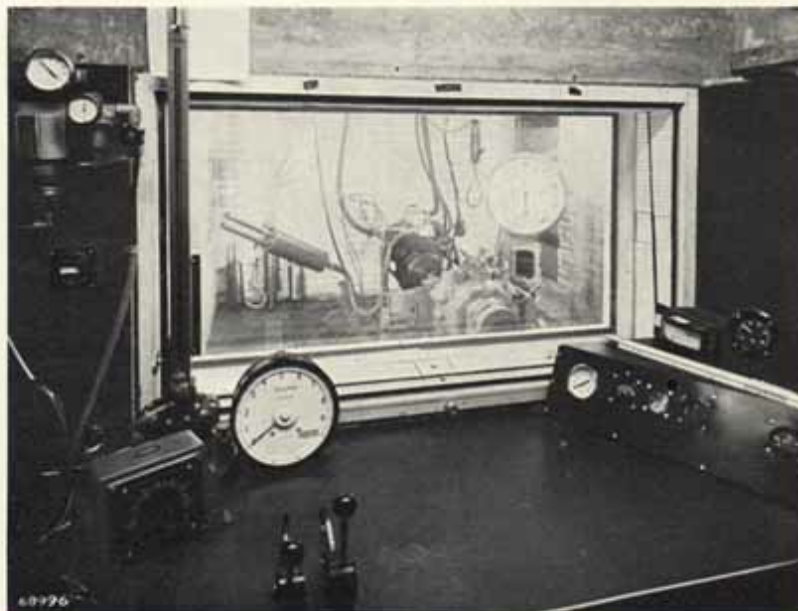
The only effective way of tuning a racing or competition engine is the use of a dynamometer. A day's hire of the test installation can put a racing engine in winning form for a whole season by, for example:—

- Establishing exactly correct carburation
- Establishing exactly the correct ignition timing
- Selecting the best of two carburettor systems
- Selecting the best of several exhaust manifolds
- Establishing correct exhaust pipe length

Power curves of the engine as received and as finally tuned are usually supplied. Customers may of course, be present and direct such experiments with the co-operation of Speedwell Engineers.

Booking

Dynamometer work must be booked in advance. If the engine to be tested is already out of its car, full instructions will be given on how to prepare it for test. Engines can, of course, be removed from and refitted to cars at the Speedwell Centre at normal workshop rates.



SPEEDWELL

Guarantee

CARS - COMPONENTS - ENGINES - SUSPENSIONS

The goods supplied by Speedwell Performance Conversions Ltd., (hereinafter called "the Company") are supplied with the following express guarantee:

1. For the purpose of this guarantee the term "Goods" means and includes any new Speedwell Modified Vehicle, supplied by the Company and includes replacement parts and other equipment manufactured or supplied by the Company with the exception of tyres, speedometers or electrical equipment or proprietary articles or goods (including coachwork) not of the Company's own manufacture although supplied by the Company.
2. For a period of 12 MONTHS from the date of which Goods are delivered to the first owner-user, the Company will exchange or repair any part which needs replacing or repair by reason of defective material or workmanship.
3. The Company will not be responsible for any expense which the owner-user may incur in removing or having removed, or replacing or having replaced, any parts to be sent for inspection or in fitting or having fitted any new parts supplied in lieu thereof.
4. No claim for exchange or repair can be considered unless the person claiming:
 - (a) Immediately upon discovery of the alleged defect returns the part or parts complained of carriage paid to the Company or the dealer from whom the parts were purchased.
 - (b) Sends particulars of the Vehicle or chassis number and engine number of the Vehicle.
 - (c) Sends full particulars of the claim and the reason therefor, stating in such particulars the date of purchase and name and address of the person or firm or company from whom the Goods were purchased.
5. No claim for exchange or repair under the terms of this guarantee may be made in respect of:
 - (a) Any Goods used
 - (i) For racing, rallying and/or record attempts, or
 - (ii) For any other purpose than the private or genuine commercial use of the owner-user.
 - (b) Any Goods which in the opinion of the Company have been injured by wear and tear, neglect, or any form whatsoever of improper use.
 - (c) Any Goods which have been altered in any way, or to which any part not sold or approved by the Company has been affixed.
6. The responsibility of the Company is limited to the terms of this guarantee and it shall not be liable for personal injuries, damage, or loss arising from any defects.
7. The judgement of the Company in all cases of claims shall be final and conclusive and the claimant shall accept its decision on all questions as to defects and the exchange of a part.

SPEEDWELL PERFORMANCE CONVERSIONS LTD - LONDON - ENGLAND

S

S
P
E
E
D
W
E
L
L

S

SPEEDWELL



SPEEDWELL

S

S
P
E
E
D
W
E
L
L

S