

FARINA NEWS



NO.5

JUNE 1981

Copyright A40 Farina Club Ltd
www.a40farinaclub.co.uk

EDITORIAL:

Many thanks for your comments re Female Logic which appeared in the last edition. Glad it was of some use, and more hints on general mechanics for the less familiar in the next edition. Our thanks to Paul Stapleton for his very useful article which appears in this edition; I'm sure we all look forward with interest to future articles promised by Paul. Any more budding journalists?

Our efforts to set up local groups is going well, and at the moment we have (or are in the process of) set up groups in the following areas: Birmingham, Surrey/Sussex, Hereford/Worce., London, Derby, Hants., Kent, Tyne & Wear, Essex, Middlesex, Glasgow, Herts., Cleveleys, and full details will be published in the October edition of Farina News. In the same mailing I hope to send out the membership list - so please be sure to complete the enclosed form with this mailing if for any reason you do not wish your name and address to be published. Thank you.

Ed Evans of Watford has kindly offered to help me set up an annual met later on this year, and we are also thinking about a met somewhere near Oxford for next year. It really would be good to all get together soon.

One last word - I've just heard of a Mk. II in Sussex (near Ashington) going for £35 for spares. Interior is not too good, though I'm told it has a new radiator. Garage may we willing to strip it for us, so if you need anything perhaps you could let Alan Barton know and he will forward details to me. Alternatively, if anyone wishes to buy it as it is please give me a ring at home. Hope to come into some new front bumpers soon (about £10 each without over-riders) so if you're interested let me know. First come, first served. Also, exploring possibility of new rubber gear lever gaitors. No idea of price at the moment, but again if you are interested please let me know.

Club Secretary

HALFORDS

Information Service

HALFORDS REDUCE MORE PRICES FOR SUMMER MOTORISTS

Free road maps of Britain are to be given away free to every Halfords customer who buys £5-worth of goods or more this Summer. In addition, Halfords - the long established auto parts, accessories and cycles retailers - are offering motorists and road users alike, price reductions on a host of products likely to be in demand throughout the Summer months.

These reductions will be available at Halfords' 360 branches nationwide until August 8th. Titled "You're miles better off here", Halfords' Summer promotion will be clearly visible in their branches with prominent window displays and in-store banners carrying a distinctive road sign theme.

A wide range of products and motoring accessories has been reduced in price, together with items of tools, car jacks and fire extinguishers, which have been purchased especially for the Summer, and are offered at highly competitive prices.

For example: a five-litre Explosafe petrol can has been reduced by £1 to only £7.95, the Kamasa 42-piece socket set (AF/MM) has been drastically reduced from Halfords' normal price of £26.50 to just £16.95, and a pair of car ramps for the do-it-yourselfer are reduced from £7.40 to only £6.35. No less than six spanner sets will be available with attractive prices ranging from just £3.75 to £4.49 and an Avonway fire extinguisher is offered at the bargain price of only £2.99.

So, motorists will not only be able to buy competitively priced summer bargains for their cars, but they also will be given the opportunity to secure a very handy Bartholomew tourist road map of Britain (MRP £1.20).

HERE ARE THE TOP TEN TIPS

Economy driving is easy –

the smart way the experts motor to get the best performance out of a

car. And both of you will benefit – a smoother ride and a longer lasting car.

There's no magic about the driving technique.

ONE Use a light foot on the accelerator pedal. Economy test champions are said to go barefoot for a more sensitive feel on the throttle, but if you treat the accelerator as if it is made of glass you can do the same. Drive as though you have a sleeping baby on the back seat and you need not take your shoes off.

TWO Put the choke in as soon as the car engine pulls smoothly.

THREE Get into top gear as soon as is possible without making the engine labour – low gear acceleration can use up to 50% more fuel.

FOUR Keep tyres inflated to correct pressures.

FIVE Use motorways wherever possible. Motorway driving just below the maximum legal limit uses up to 20% less petrol than the same average speeds on major trunk roads.

SIX Don't hoard junk in the boot – many of us carry over 50 lbs of excess

weight in our cars. And fit that roof-rack only when you need it.

SEVEN Don't drive on a full tank. Each gallon of petrol weighs 8 lbs and a half-full tank can reduce consumption by over 2%.

EIGHT Make sure your brakes are not sticking "on", increasing drag.

NINE In long traffic holdups switch off the engine. Idling is expensive.

TEN Make sure your engine is properly tuned.

THE HALFORDS HEALTH SERVICE

Watch and listen for symptoms, just like your doctor. Spot them, act on them and you are well on the way to saving on petrol costs.

Poor starting? Stalling at the lights? Sluggish acceleration? A spluttering exhaust and rising fuel consumption?

Troubles start at the pulse of your car – the explosion, thousands of times a minute, that takes place in the engine's cylinders when a nice fat spark ignites a perfect mixture of air and petrol vapour. Get the basics right, on time with the engine revolutions, and you are in business.

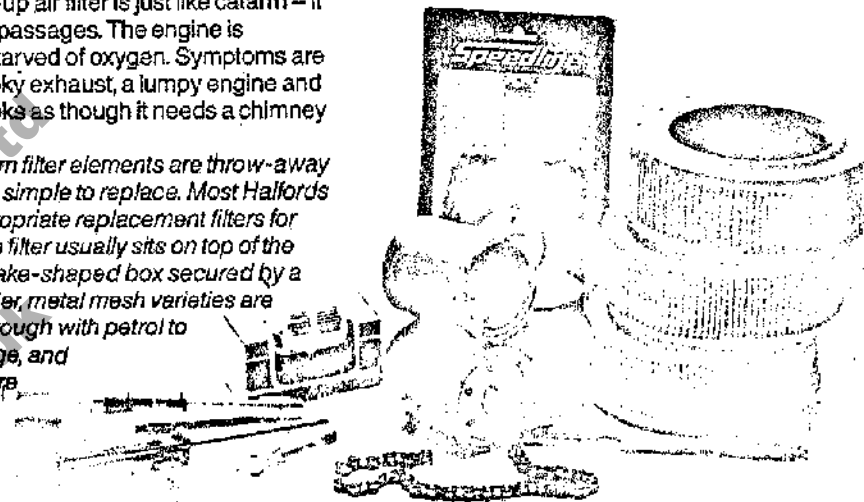
THE HALFORDS HEALTH SERVICE

BREATHING

A clogged-up air filter is just like catarrh – it blocks up the air passages. The engine is breathless and starved of oxygen. Symptoms are bad starting, smoky exhaust, a lumpy engine and a tail pipe that looks as though it needs a chimney sweep.

ANSWER: Modern filter elements are throw-away items, cheap and simple to replace. Most Halfords stores carry appropriate replacement filters for most models. The filter usually sits on top of the engine in a pancake-shaped box secured by a single screw. Older, metal mesh varieties are quickly rinsed through with petrol to dissolve the gunge, and lightly oiled before replacing. Tools needed – a screwdriver.

3



Products available from Halfords: Oil filters, Fuel filters, Air filters, Oil filter removing wrench, Screwdrivers.

LUNGS

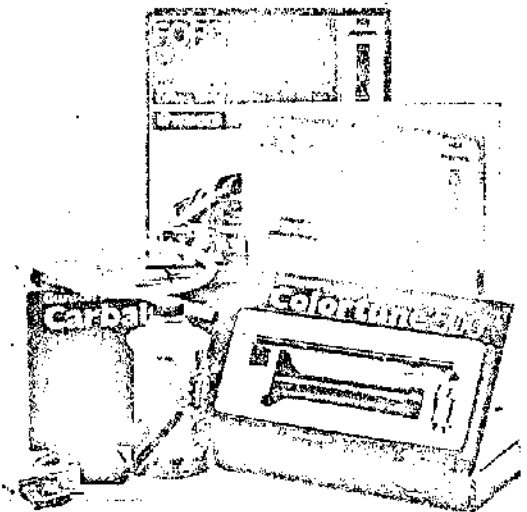
The carburettor needs sharp tuning to give its best cocktail mixture of air and petrol. It delicately measures each drop of valuable fuel and feeds it to the cylinders.

ANSWER: Check and clean the carburettor body. With the engine running – and workshop manual by your side – slowly adjust the slow-running and throttle-stop screws, following the manual instructions.

If your carburettor is fitted with an oil damper, make sure it is filled to the correct level.

An invaluable tuning item – the Gunson's Colortune 500 – screws into a spark plug hole and actually lets you see the colour of the combustion flame inside the engine. A bright blue flame is what you are aiming for, and gently adjusting the mixture screw on the carburettor as you watch the flame does the trick.

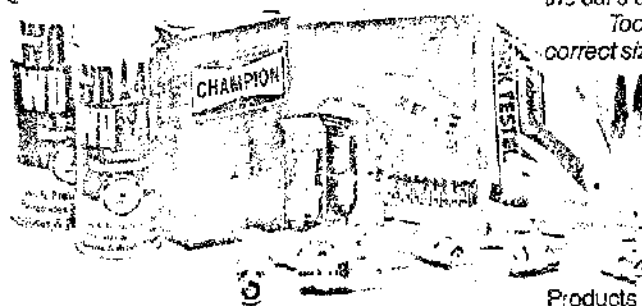
Tools needed – screwdrivers and a colortune testing plug.



Products available from Halfords: Haynes Workshop Manual, Gunson's Carbaler, Gunson's Colortune, STP petrol treatment.

ULSE

The spark plugs screwed into the cylinder head produce the nice fat spark we mentioned, and checking on their condition can pay big dividends in petrol saving and easier starting. **ANSWER:** Remove the plugs one by one. Badly discoloured, sooty or burnt electrodes are easy to



spot. Cleaning up with a small brush and setting the electrode gap according to the car instruction book recommendations is simple.

If the plugs have been in service for more than 10,000 miles, replace them. If badly burnt, or pitted, or the porcelain body of the plug is cracked, throw away and replace - checking the type number and length of threaded body with the car's driver manual before buying new.

Tools needed - spark plug wrench of correct size and set of feeler gauges.

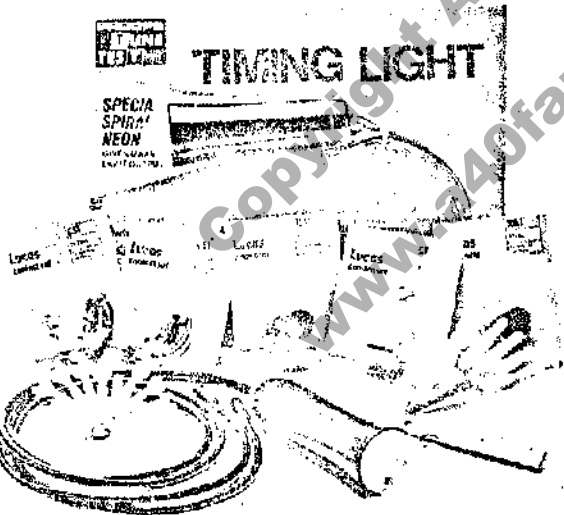
Products available from Halfords: Feeler gauge set, Spark plugs, Spark plug wrench, Spark plug brush, Mobelec spark plug tester, WD 40.

HEAT

The distributor is responsible for controlling the production of the very high voltage electric current fed to the spark plugs and distributing this to the right plug at precisely the right time. It is usually mounted on the side of the engine block and is connected to each of the spark plugs, and the coil, by thick cables (the 'HT leads').

Underneath the plastic distributor cap, which is held in position by two simple clips, are the contact breaker points, the rotor arm and the condenser.

Most important in the quest for economy is the condition and setting of the contact breaker points. The contact faces should be clean and flat with no traces of burning or pitting - if there are, or the contact breaker set has been in service for more than 10,000 miles a new set should be fitted. The gap setting is critical, check and adjust if necessary with a feeler gauge, it's quite easy and your workshop manual will give you full details.



Products available from Halfords: Electronic timing light, Points/contact sets, Rotor arms/condensers, Feeler gauge set, Ignition spanner set, H.T. Leads.

The condenser normally requires no maintenance and the rotor arm simply needs keeping clean and checking for cracks in the plastic insulation - if there are any cracks present high voltage current will leak away affecting engine efficiency and a new part should be fitted. Don't use abrasives such as emery cloth or sandpaper for cleaning metal parts on the rotor - a brisk rub on the sidewall of a tyre will suffice.

Likewise a dirty or cracked distributor cap will reduce efficiency - keep it clean inside and out and replace if damaged.

Finally, the last link in the chain - the 'HT' leads connecting the distributor to each of the spark plugs and the coil. These can deteriorate

Getting the current to each plug bang on time with the engine turning cycle is vital for easy starting and smooth running. This critical adjustment, easily achieved, is the key to good performance and fuel economy, whether you own a Mini or a Ferrari.

ANSWER: Electronics come to the rescue for the quickest, cleanest and easiest of tune-up jobs. Getting the spark and engine timing synchronised used to be a lengthy job. Now it can be accomplished in a few minutes with a timing light "gun".

Basically a lead from the timing light is connected to one of the spark plug leads, making the neon tube in the light flash on exactly when the plug is firing. Some models also connect to the car battery or the mains, to provide a brighter light.

On the front of the engine, at the bottom, is a pulley around which the fan belt passes and on this pulley is a timing mark put there by the car manufacturers. Behind the pulley, on the engine casing, is another mark.

Simply aim the timing light at these two marks, which will appear stationary even though the engine is running. If the marks appear in line

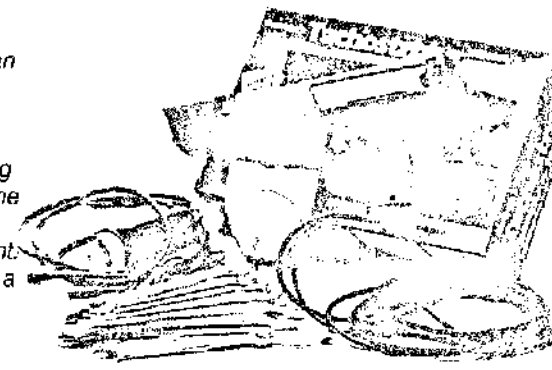
with age leading to current leakage, which in turn reduces performance, affects economy and very often causes difficult starting particularly on cold damp mornings. If the 'HT' leads on your car show any signs of cracking or perishing, or are more than two years old, scrap them and fit a new set.

ANSWER: Tuning the spark and the components that make it all happen on time is the important thing here, and no part of it is beyond the capacity of the average DIY motorist. You may need a set of high tension leads, a set of points, a distributor cap, a rotor arm.

Tools needed will include screwdrivers and feeler gauges.

with each other the timing is correct. If they do not line up then the timing needs resetting - your workshop manual will give you full details.

Tools needed - Timing light and spanners to fit distributor clamp bolt (if resetting timing).



Products available from Halfords: Electronic timing light, Gunson's Tachostrobe, Open ended spanners, Spark tune.

FARINA GARAGE

OVERHAULING THE BRAKE MASTER CYLINDER

Paul Stapleton

LOCATION

The brake master cylinder is located on the offside of the car in the back of the engine compartment, to the offside of the almost identical clutch master cylinder.

FUNCTION

To transmit and multiply force applied to the brake pedal, via the rest of the brake hydraulic system, to operate the brakes.

A piston (11 in diagram) in the master cylinder bore is connected to the footbrake pedal (3). A pipe runs from the top of the master cylinder bore to slave or wheel cylinders located in or near each wheel. Each slave cylinder contains one or two pistons which operate the brake shoes. All pipes and cylinders contain brake fluid. When the brake pedal is pushed down the piston in the master cylinder moves up, forcing brake fluid along the pipes to the slave cylinders. Pistons in the slave cylinders are forced out, applying the brake shoes against the drums. When the brake pedal is released powerful springs on the brake shoes pull them back from the drums, which forces the pistons back into their slave cylinders. Brake fluid is forced back along the pipes to the master cylinder, pushing the master cylinder piston back down to the bottom of the cylinder bore.

HOW FAULTS OCCUR

Two rubber seals (12, 14) are fitted to the piston (11), ensuring its snug fit in the cylinder which prevents escape of brake fluid. With continued use the seals wear, fluid seeps out round the piston and air gets into the hydraulic system. This leads to 'spongy' ineffective brakes and the brake pedal has to be pushed down several inches before the brakes work.

The benefits are enormous, from easier starting to better fuel economy and minimal maintenance. Halfords' easy-to-fit systems range from the Mobelec Max - a budget priced unit, through to the sophisticated Sparkrite SX 2000. Both have a built-in dual switching system which allows a choice of conventional or electronic ignition, plus a disabling anti-theft device. Also available is the Mobelec Magnum - a contactless system with no moving parts which will fit virtually every make of distributor, using adapter kits.

Tools needed - hand or electric drill (for attachment holes) and small screwdrivers.

Having introduced you to the world of Electronic Ignition, we would suggest that you see the working units which are on display in most of our stores.



Products available from Halfords: Sparkrite SX 2000, Mobelec Max, Gunson's Spark tune.

Here's where inexpensive, modern electronics come in to take doubt and the hard work out of sorting your car's electrics. Foolproof spark tuning equipment such as Gunson's Sparktune can check in seconds the condition of contact breaker points, the "dwell" (how long the contacts remain closed to transmit the spark) and the voltage rate coming from the coil. It is child's play. Tools needed - a low-cost testmeter such as Sparktune.

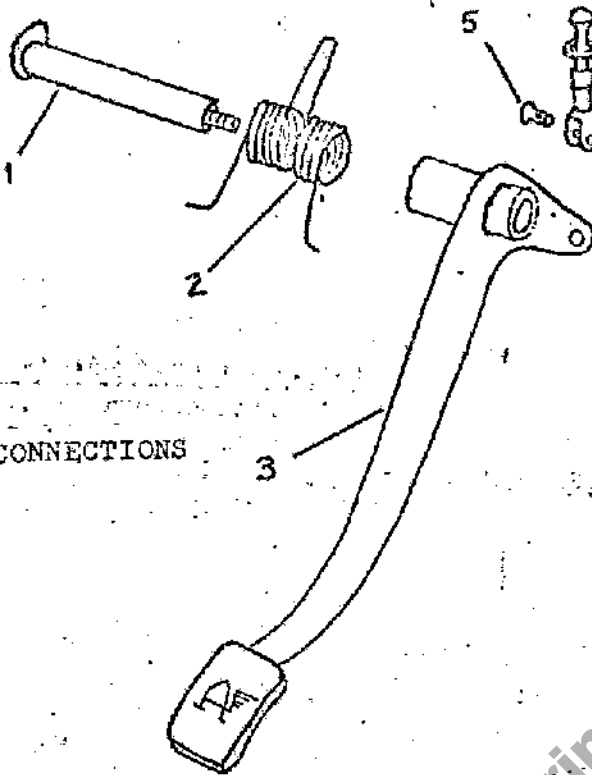
All of a sudden the mystery of engine tuning is revealed. A little practice, taking each item step-by-step will show you how simple the basics of tuning and engine maintenance can be. Fun - and rewarding in saved money and a better running car.

Remember, we're not talking about major repairs or the techniques of car care that take the specialised skills of a long-trained mechanic, nor the expensive professional equipment used in a garage workshop.

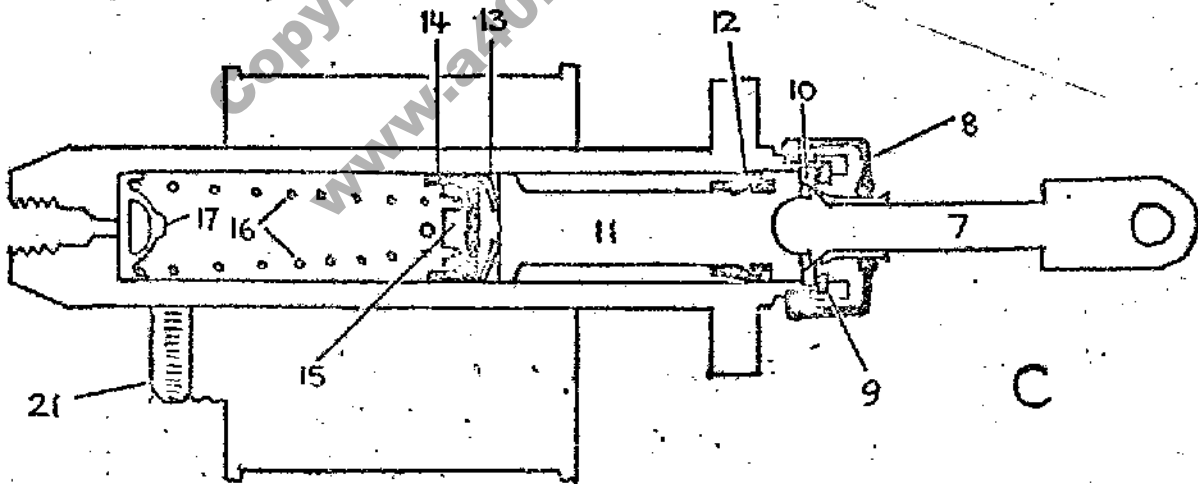
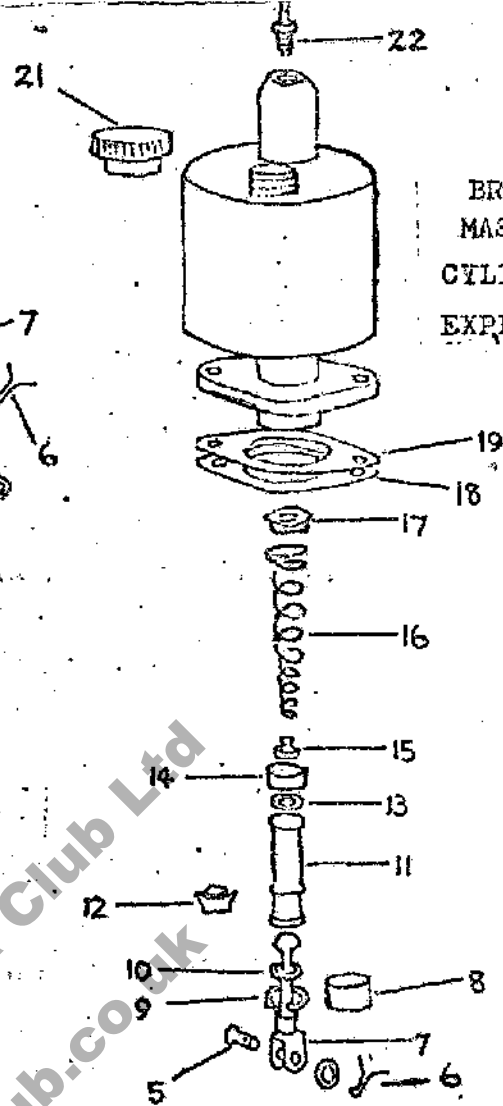
The first step to sorting out baffling science from easy-to-understand fact is in reading a Haynes Workshop Manual produced just for YOUR car. These are now available for most makes and models - the low-cost low-down, written in clear, non-technical language and illustrated with drawings and photographs showing simply how each component can be worked on, and what tools or spare parts you may need. The manual is the first move in learning how to save money - and influence your Bank Manager. And at Halfords we stock a complete range.

Having covered the traditional areas of petrol economy, there remains one area, 'Electronic Ignition', which certainly deserves a mention. The chances are that the car of your dreams will already be fitted out with such a unit. However, your existing car can easily be fitted with a similar system.

BRAKE PEDAL CONNECTIONS



BRAKE MASTER CYLINDER EXPLODED



CROSS SECTION OF BRAKE MASTER CYLINDER

- 1 Pedal Shaft; 2 Pedal Return Spring; 3 Brake Pedal; 4 Nut for Pedal Shaft; 5 Clevis Pin - Brake Pedal to Master Cylinder; 6 Split Pin; 7 Pushrod; 8 Rubber Boot; 9 Circlip; 10 Stop Washer; 11 Piston; 12 Rubber Seal; 13 Piston Washer; 14 Rubber Cup; 15 Cup Expander; 16 Return Spring; 17 Valve Assembly; 18 Gasket; 19 Packing Piece; 21 Reservoir Filler Cap; 22 Union Pipe to Master Cylinder.

DETECTING MASTER CYLINDER FAULTS

If you have spongy brakes, first examine the footbrake pedal shaft (3) and the rod (7) connecting it to the master cylinder piston. Any signs of brake fluid here indicate a leaking master cylinder which must be repaired. If no fluid can be detected, all slave cylinders will have to be inspected for leaks, which will involve removing: front wheel brake drums on all A40's; rear wheel drums on Mk. II's; rear brake cylinder bracket on Mk. I's. If no brake fluid can be seen seeping out from under one of the rubber dust covers present on each slave cylinder, then the master cylinder must be responsible for the sponginess. It will have to be removed, dismantled, inspected and repaired or renewed, tested and then replaced. The only special tools required are a $\frac{1}{2}$ inch AF ring spanner, a vice and a pair of circlip pliers.

REMOVING THE MASTER CYLINDER

This is the most fiddly part of the whole job and is best done by first removing the driver's seat by unscrewing the four bolts attaching the front of the seat to the floor cross-member.

Remove the circlip or nut (14) on the right-hand end of the cross-shaft (1) on which the brake and clutch pedals pivot. The cross-shaft can then be pulled left until it hits the heater.

Prise off the hooked end of the return spring (2) from the brake pedal shaft (3) by levering against the shaft with a screwdriver.

The pushrod (7) linking the pedal shaft to the master cylinder piston is attached to the top of the shaft by a clevis pin (5) secured by a split pin (6). Push the pedal shaft (3) down out of the way and squeeze split pin (6). Push the pedal shaft (3) down out of the way and squeeze the ends of the split pin together with a pair of pliers (I find this easiest to do lying on my back). Then rotate the clevis pin with your fingers, grasp the closed end of the split pin with the pliers and pull hard to remove. The clevis pin can be pushed out.

Working in the engine compartment, undo the union (22)

securing the pipe into the top of the cylinder and pull out the pipe and union. The two nuts securing the cylinder can be undone only from the front of the car using a $\frac{1}{2}$ inch AF ring spanner. Remove the securing nuts and washers and withdraw the cylinder. The gasket (18) and packing piece(s) (19) underneath the cylinder flange will probably be perished but try and remove them carefully with a knife for re-use as they are no longer available (at least, not from Unipart).

DISMANTLING

Clean the outside of the cylinder with a stiff wire brush. Empty the brake fluid into a clean jamjar. Pull off the rubber boot (8), easing it over the pushrod (7).

Insert the cylinder in a vice, pushrod (7) uppermost, push the pushrod down slightly and with a pair of internal circlip pliers remove the circlip (9) which retains the pushrod. (A pair of external circlip pliers can be used by pulling the handles outward, but a friend will be needed to push down the pushrod while you remove the circlip).

The pushrod and stop washer (10) can now be removed, and the cylinder removed from the vice. To remove the internal parts tap it on a wooden surface, force air down the top with a bicycle pump, or failing these attempts poke a thick, blunt wire down the top of the cylinder.

Remove the rubber seal (12) from the piston by carefully levering it off with a small screwdriver.

INSPECTION

Feel the inside of the piston bore; there should be no scoring. If there is the whole cylinder will have to be replaced as scores will either damage the rubber seals or allow fluid to leak past them. A complete cylinder is available from Unipart, (part no. 2A5649) price about £15, and Moprod may have recently added this part to their range - check with your local dealer.

Any stubborn dirt or rust in the bore or on the piston should be gently removed with fine 'wet and dry' paper.

REASSEMBLY

Brake master cylinders fitted to Mk. I and Mk. II cars are identical. A repair kit is available from Unipart (part no. 8G8258), Lockheed (KL71535) or Moprod (M71535), consisting of a rubber boot (8), rubber seal (12), piston washer (13), rubber cup (14) and valve assembly (17) (the latter may be of various designs) and costs about £3. It is false economy to try and re-use any rubber parts from a leaking cylinder as they will probably be worn even if they don't leak it.

It is essential to be scrupulously clean when re-assembling as any dirt which gets into the piston bore may get trapped between the piston and its bore and cause scoring or seizure.

Use the brake fluid saved from the cylinder to further clean the outside of the cylinder, using an old toothbrush. Swill fluid round the reservoir several times and discard to remove all sediment; swill fluid up and down the piston bore several times to clean and ensure that some escapes into the reservoir, thus showing that the small hole connecting the two is not blocked. If it is, carefully clear with a bent wire. Clean all internal parts to be re-used with brake fluid. Finally, use fresh brake fluid to swill out the reservoir and piston bore and to clean and lubricate all parts before refitting.

Reassemble as shown in the diagram. The return spring (16) fitted with valve assembly (17) and cup expander (15) is dropped into the piston bore and the rubber cup (13) pushed down after them, followed by the piston washer (13) with its concave face towards the cup. The rubber seal (12) is eased onto the piston (11) with the fingers and the piston pushed firmly down into the piston bore with a twisting motion to avoid turning back or breaking the lip of the seal. (I like to remove the piston once to check that the seal is O.K.). The pushrod (7) and stop washer (10) are reinstated with the circlip (9), and the rubber boot (8), lubricated with brake fluid, is stretched over the pushrod and fitted onto the cylinder.

TESTING

Fill the reservoir with fresh brake fluid and push the pushrod up. It should return unassisted and after a few strokes fluid should be ejected from the top of the cylinder at each upward stroke of the pushrod. Under these conditions the valve assembly (17) prevents ejected fluid from returning into the piston bore on the return stroke. The piston bore is recharged with fluid from the reservoir via the small hole connecting the two.

REPLACEMENT

Replace the gasket (18) and any packing pieces (19) over the bolts securing the cylinder to the engine compartment then refit the cylinder in the reverse order to removing. Top it up with fresh brake fluid to the bottom of the reservoir filler hole.

Air introduced into the hydraulic system by this repair must be removed by 'bleeding' which I shall describe in my next article: 'Wheel Cylinder Repair and Brake Adjustment: A40 Mk. II'.

CLUTCH MASTER CYLINDER

Procedures for overhauling the clutch master cylinder, also common to both cars, are identical to those outlined here. The internal parts are identical except that no valve assembly (17) is fitted. Repair kits are available from Unipart (part no. 8G8424), Lockheed (KL71534) and Moprod (M71534) and complete cylinders are available from Unipart (2A5650) and may now be available from Moprod - check with your local dealer.

* * *

USE YOUR STARTING HANDLE

Paul Stapleton

Apart from its obvious use, a starting handle is handy for the following:

(1) Adjusting valve clearances - Turn the engine over slowly with the starting handle to get inlet and exhaust

L FARINA W

USE YOUR HEAD BEFORE YOUR LIGHTS....and
don't be dazzled by the law

(Reproduced from the Daily Mail, 14.11.80.
'Motoring' page by Michael Kemp)

Police have won a technical victory of vital importance to every driver in Britain. It means that in poor daytime visibility you must have dipped headlights on even though you may be dazzling the driver ahead.

The ruling, won in the High Court, could conflict with another law which demands that motorists must have due consideration for other drivers.

The RAC test case ruling is the most positive move yet to apply a legal definition to what constitutes 'poor visibility conditions' in daytime.

But it is still a matter you must decide. If you do not switch on your lights in foggy weather you could argue that in your opinion the conditions were not sufficient for your lights to be needed.

But if you decide that for safety you should have your lights on, it is not sufficient to switch on sidelights only - you must switch on dipped headlights or two auxiliary lights.

Having admitted - legally - that you consider lights necessary, the law then says that these lights must be dipped headlights. Therefore, you risk a fine of up to £100 if you ignore this.

The RAC represented a motorist who was summonsed by police after failing to display obligatory lights in daytime during poor visibility.

He was driving one morning on dipped leadlights but switched them off when he joined a nose to tail traffic queue. He argued, seemingly sensibly, that since he was in traffic queue it would have been inconsiderate to risk dazzling the driver ahead and that safety could

be achieved by switching-off headlights at that point. The police lost the case, then sought a High Court decision which they have just won.

Mr. John Izod, the RAC solicitor, says: 'We feel the decision shows the law to be in an unsatisfactory state and should be amended to allow for the use of side-lights in certain suitable conditions, such as those stated in the case, and also when it is clearly necessary, such as shortly before sunset and shortly after sunrise.

'In such conditions the use of sidelights is very desirable but the use of dipped headlights is unnecessarily dazzling.'

The new ruling means that it is no good the driver in front tapping his rear view mirror in annoyance at the lights from the car behind in nose to tail traffic in fog or poor daytime conditions.

It would be foolish for the driver behind even to consider switching off his headlights in view of the High Court decision.

* * *

S FARINA L E

OLYSLAGER MOTOR MANUAL

If any member is interested in obtaining a copy of the above, contact Robert Anderson (41A Howdles Lane, Brownhills, Walsall, WS8 7PL. Tel: Brownhills 71307) who is willing to sell them to club members at a cost of 50p each including postage and packing.

* * *

Copyright A40 Farina Club Ltd
www.a40farinaclub.co.uk