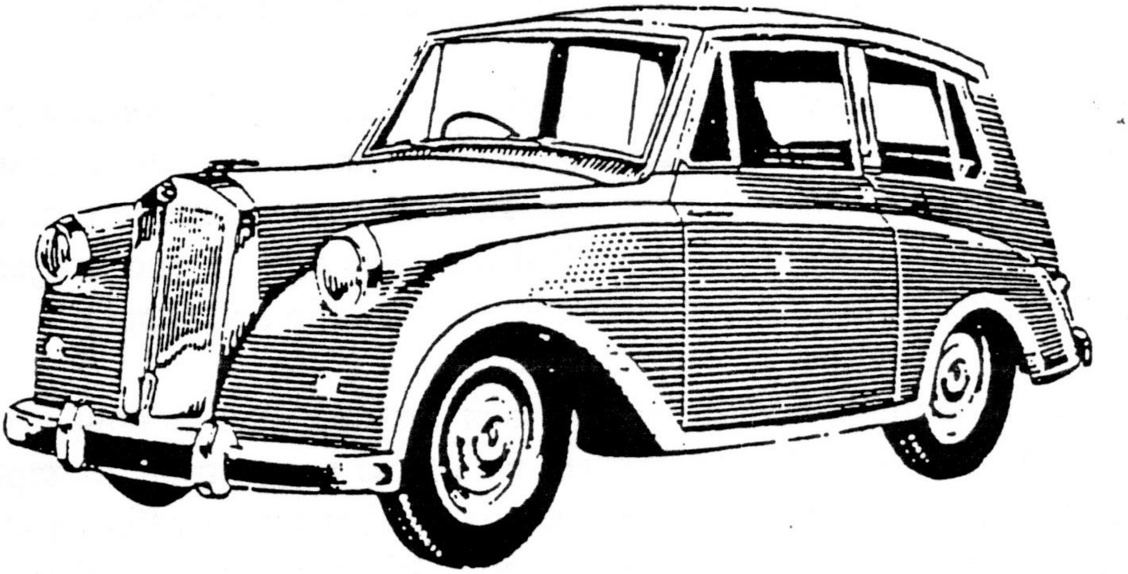

The Triumph Mayflower Club

TECHNICALITIES: FUEL, EXHAUST & COOLING

February 2019 | Paul Burgess

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Overheating – Howard Pryor, Flower Power, Autumn 2001

Most overheating problems can be attributed to blocked radiators, fuel starvation or more commonly incorrectly set ignition timing. After having set the timing to the manual specifications you would be forgiven to think you had it right, I know I did.

However, our cars are now nearly 50 years old and it is quite feasible that the distributor has been changed at sometime in the car's life. The Mayflower uses a DKYH4A distributor and so do approximately 50 to 100 other British cars. The important number to look for on the correct distributor is DKYH4A-40232A or B. The DKYH4A number signifies what type of distributor it is and a dealer can visualise its appearance, the second set of numbers (40232 A or B) denotes what counterbalance weights it has plus what spring strength is on the weights which then sets the ignition timing to 9 -11 degrees.

I found I was running a Morris commercial distributor, which was fine on tick over and at moderate speed, but put your foot down and the engine started to get hot If your existing distributor is the correct number but is worn out it is a very simple matter to transfer the counter balance weights, plus springs, into another distributor body where the bearings are good. I have just changed the counter balance weights and springs and will soon be testing the car on a run.

Overheating -Water Jacket Sludge – Jay Jarret, Flower Power, Summer 2002

Whilst rebuilding my engine I removed the corroded core plugs from the block for replacement. I found the water jacket choked up with sludge, especially around number four cylinder where the least amount of circulation takes place. With the core plugs removed and the head off it was easy to pressure wash the water jacket and it was surprising how much gunge came out. Also cleaning the head water parts, which were also half blocked, is bound to help. It helps to keep engines topped up with anti-freeze to stop further corrosion.

The core plug at the back of the engine can also be removed with the engine in situ if you remove the circular disc in the bulkhead/firewall and do it from inside the car.

Overheating Problems - Malcolm Barnsley, Flower Power, Spring 2002

After the annual rally of 2001 I could not believe how many Mayflowers were suffering from overheating problems. I can never remember my grandfather complaining of my car overheating when he owned it in the 1950s, 60s and 70s. (I took her on in 1975 with a mileage of 33,933, and then she was off the road for 26 years).

I was a little surprised when my Mayflower overheated badly from Kent to Aylesbury using just 'A' roads. The journey took a lot longer and was more agonising than it should have been, so I set out to overcome the problem and after many hours of work have come up with the following. Before I go into my findings, I would like to say that anyone with a little mechanical knowledge can carry out the following instructions or know someone who can help.

Most Mayflowers overheat when the engine is under load, i.e. accelerating hard or going up hills. It has also been known that overheating will occur on a motorway at a steady 50 mph. Of course, modern day petrol doesn't help as it burns hotter than petrol of the 1950s.

The first thing to check is the fan belt which must be the right one and adjustable. Check also that the blades are the right way round. Engine timing is very important. Firstly, check that the contact points are correctly set, if badly pitted fit a new set, between 0.012" to 0.015". The marker on the timing cover shows "top dead centre" and on the bottom pulley there is a dot. As there is no timing marks on the bottom pulley you will need to mark the two degrees before TDC (5 mm) with white paint in order that the timing is set correctly (engine runs clockwise).

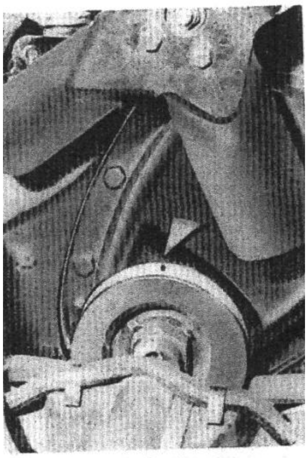


Fig. 1

To find out whether the advanced and retard is working, you will need a strobe light. This is to enable you to see the timing marks. (As the fan blades are very close to the timing marks make sure you don't get the strobe light caught up in the blades while the engine is running).

Fit the strobe light on to number one spark plug lead, start the engine and warm it up. Point the light at the white marks on the front timing case, you will see TDC, the two degrees before TDC marks, and if needed, adjust the distributor turning it very slowly by undoing the retaining bolt. When the timing is correct tighten up the bolt then check the timing is correct as sometimes it moves slightly when tightening.

With the engine running, you can now check the advanced and retard is working. Very carefully point the strobe light at the front timing mark. When you can see them clearly, pull the accelerator cable back and as the engine starts to increase its revs you will see that the advance and retard system starts to work. The white dot will move to where it is marked below. I have put a diagram to help explain the sequence above (see Fig. 1).

With all the above work carried out it is time to road test. If you are still overheating it is probably the radiator that is blocked. The only way to tell is to have it flow tested. In my opinion it is not worth mucking about with. Get a new core fitted as being of modern material it disperses the heat more effectively and the radiator people leave you with the original top and bottom tanks.

I tried "Holts Anti-Freeze — Methanol Free" part number PAF 50A in an Astra — ordinary anti-freeze versus new anti-freeze. I took the car to north London from Maidstone, Kent and back and the car ran a quarter cooler with the new anti-freeze, which also helps break down the sludge in the car's engine at the same time. I ran the anti-freeze at ¾ anti-freeze to ¼ mix. It makes a lot of difference as my engine was now running too cold which is as bad as an overheating engine. The radiator people advised me to buy a brand new thermostat, yes a thermostat; the number is ACl, which helps keep the engine temperature constant between 70°C and 80°C.

Next I flushed out the heater matrix by fixing the garden hose and letting it run through for about five minutes. I purchased a new heater valve from the club and at first I was puzzled as to how it worked. Only by looking at the car's original one and taking it apart did it become clear. It has a three way working with the off in the middle position and full on when set at either end. The only reason I think they did this is because on some cars it was fitted in different position.

I went to my local plumbing centre, got two washers (19mm wide with a 10mm hole in middle and 2½ mm thick) and stuck them together with 'Superglue'. These were made to fit between an inlet pipe and the valve as shown in Fig.2). Fit the washers over the pipe, use some gasket sealer and bolt the lot together. This worked with no problem for me. (I've done this with motorcycle puncture repair patches—Ed). I would advise fitting a new heater pipe as old ones can always cause trouble especially when you are miles away from home. This goes for all hoses

. The heater matrix has hot water passing through it at all times, and because of this, the heater matrix acts as another radiator, the cooling effect is even better. When at the 2001 rally I heard people had put their heater on to help cool down the engine. In fact all they did was heat up their feet on a very hot day!! The valve and setting work as in Fig 2.

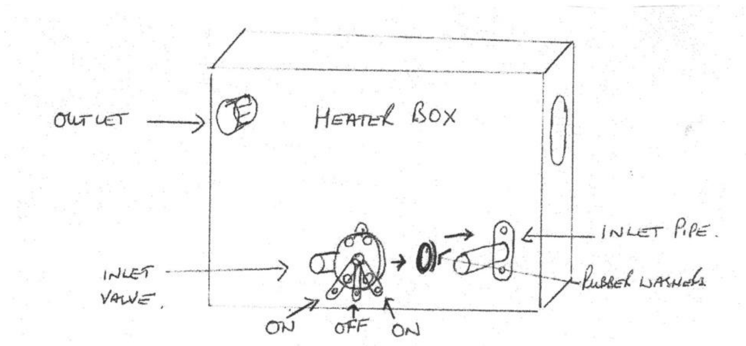


Fig. 2

<u>**A Possible Answer To Overheating Problems** - Eddie Copson, Flower Power, Winter 2003</u>

I had a very interesting conversation recently with Howard Pryor on the problem of overheating. It started when I phoned him to ask him to bring a speedometer cable for my Mayflower to the AGM. The clock in my car was wavering by a good 10 mph. We discussed the usual, take it out and clean it, oil it etc, but I knew that when those little flats at the end of the cable are worn there's only one thing to do and that is to change it. The conversation then came to that perennial chestnut, overheating.

My Mayflower has not suffered unduly from this problem in the year or so that I have had it on the road but I will come to that later. We discussed at length the technology, if you can call it that of the cooling system. Howard came up with this very interesting theory that Historian Steve Coulman had mentioned to me at last year's rally concerning the bypass hose. Howard then sent me an email that read something like this:

"In my occupation as a plumbing and heating engineer I am often called out to repair heating systems that are out of balance, that is one radiator is hotter than the others and the furthest one on the system is coolest. I explain that water is lazy and will always follow the easiest route. Restricting the water flow to the hottest radiator by adjusting the lockshield valve and forcing the hot water through the system to the furthest radiator solves the problem.

Simple? Of course, but what has this to do with the Mayflower? Overheating has always been a problem especially with fuel burning hotter. Most owners go down the route of plugs, points, timing, checking for radiator blockage, flushing the engine block, fitting the correct thermostat, etc. What is left? The bypass on the thermostat housing.

The bypass runs from the aluminium thermostat housing to the water pump connected by a short length of hose. Inside the housing is a purposely reduced orifice, this can easily corrode and become enlarged and allow too much water to pass through, i.e. the lazy water syndrome.

What I did was to cut a short length of copper pipe with a 6mm inside bore and fix it in solid using a back to metal compound. The result was instant, I now run at a constant 75 degrees even on a steep incline. To test this theory further Steve Coulman also performed this modification by aluminium welding the casting and then drilling the hole to 6mm, another success."

So that was Howard's e-mail. Never to be one to be left out I decided to investigate for myself by studying the water flow diagram. Stripping a water pump completely and measuring three spare thermostat housing castings and came to the following conclusion (please forgive me for being very basic with some of the information).

The cold water flows from the bottom radiator hose up to the pump. From here the pump forces the water into the engine block and up in to the head and then into the thermostat housing (fig. 4).

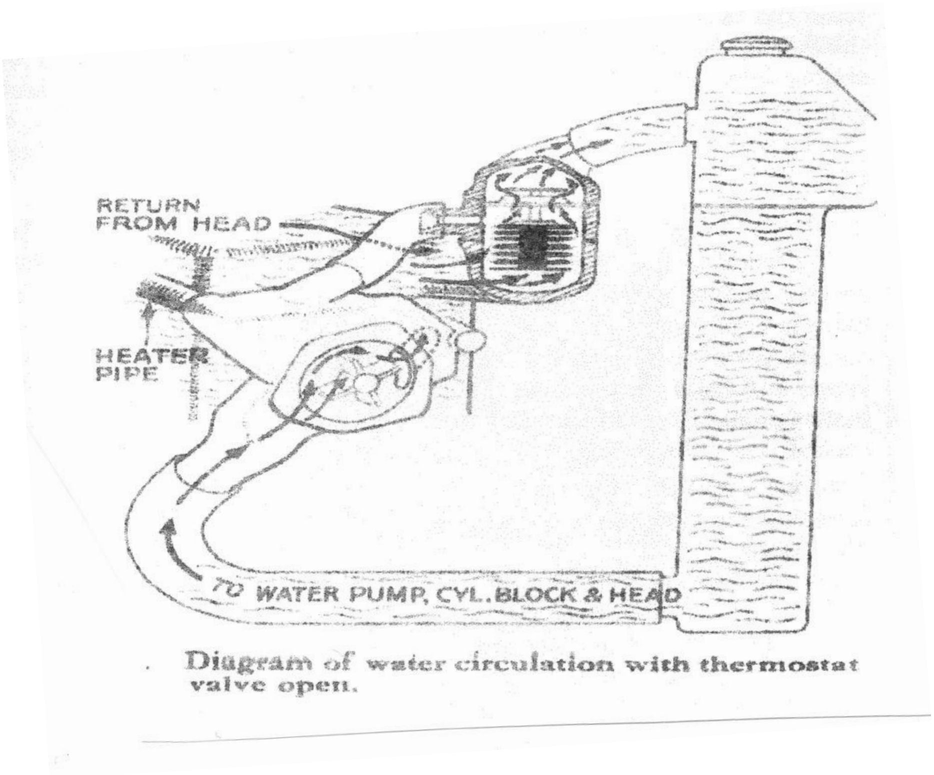
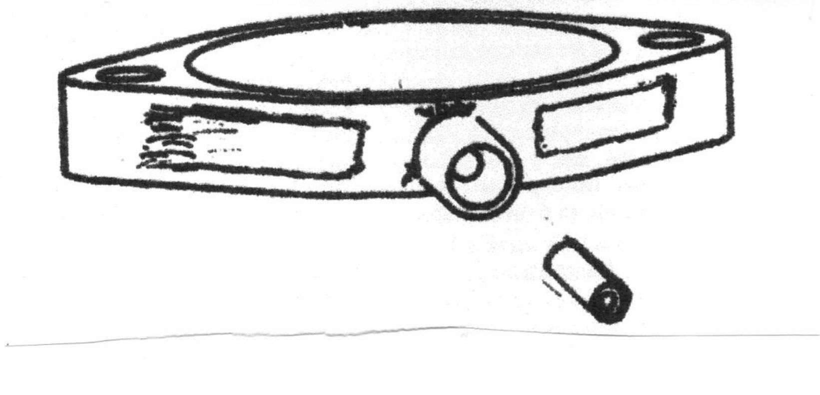


Fig. 4

It should then split into two directions, back to the rear of the pump and also into the heater, or be pushed up into the header tank of the radiator and then fall due to the thermo siphon system (hot water rises, cold sinks) towards the bottom hose being cooled by air flowing through the radiator.

As seen from the diagram, water has two choices of flow when it reaches the thermostat housing. Push up past the gap left by the open thermostat or take the lazy route and flow to the left through the oversize hole in the aluminium casting into the bypass hose and back into the pump thus avoiding being pushed into the radiator to be cooled.

Well back to my Mayflower. I decided to look at my thermostat housing even though as I said my car has never overheated but was erratic and easily went towards the boiling point before the thermostat opened to cool the engine. To my surprise I found that on removing the aluminium housing the small bypass hole was completely blocked by bits of silt obviously as a result of overheating the engine some 12 months ago and disturbing the cooling system. What does this suggest? I think it tells us that Howard's theory is correct and the bypass hole is too big. So it's move over Newton with your silly apple, we have Howard's Way with his Lazy Water.



For further information on the way I modified my casting was by threading a piece of aluminium rod, drilling a 6mm hole through it, tapping the casting and then screwing it into place. On inspecting the castings the holes were approximately 8mm, reducing this to 6mm seems to be the answer.

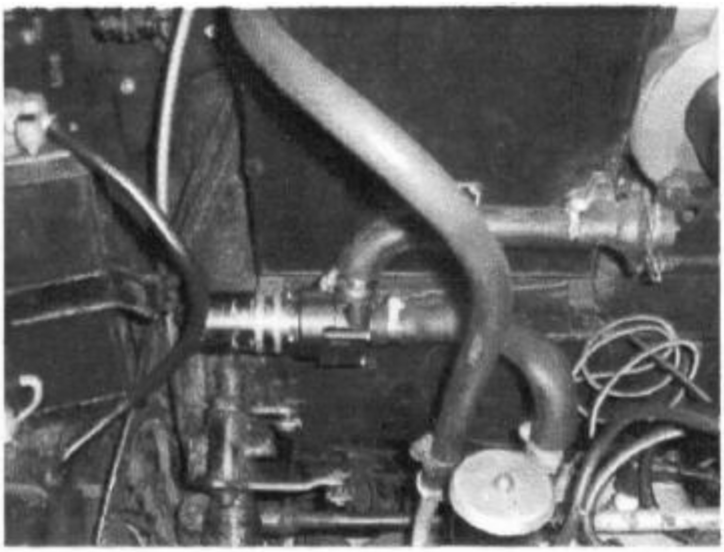
The thermostat in my car is letter "A" and 71 degrees. This begs the question, if your car overheats would putting a clamp on the bypass hose (to restrict the water) have the same effect? Please, if anyone tries this let us know but don't bill us for the hose if it rips!

One Answer on Overheating –Ralf Krupholter, Flower Power, Spring 2009

I would like to let you know how I have fixed the overheating problem, as you know the car always overheats when the car is standing still and the gasket blows.

I have installed a little electric water pump from Bosch into the water hose to the heater and with a thermostat switch, so when the car is standing the little pump works as long the motor is hot.

The pump is Bosch Number 0392 020 024, I have used a thermostat from Kenlow, the rest you can see in the pictures.



View of the pump in the heater hose

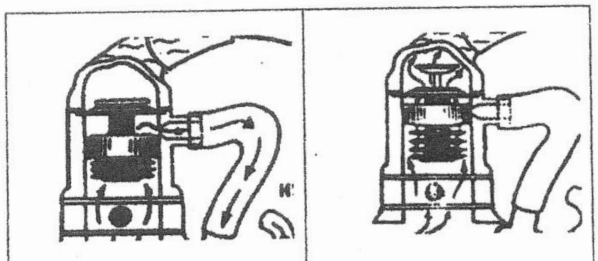
Another view of the pump

Thermostat Operation – Eddie Copson, Flower Power, Summer 2004

I wrote an article for Flower Power in the Winter Edition 110. However, I did not know it was going to be read by other clubs, i.e. the Roadster Club, in particular Bob Fitsall. As a result Bob sent the following letter to Howard Pryor which makes very interesting reading:

Dear Howard,

Further to our conversation on thermostats and bypasses, I enclose a copy of the cooling system from the Vanguard workshop manual. This depicts and describes the action of the Vanguard and Renown engines.



by-pass open
fig 9

by-pass blocked off
fig 10

You will see from fig. 9 that when the coolant is cold and the thermostat closed, the pump delivers the water to the block. The coolant then travels from the block to the head and then to the thermostat. Since the valve at the top is closed, the coolant cannot pass to the radiator and must return to the pump through the bypass.

Fig. 10 shows the thermostat open, when the engine is hot. The water from the head is now able to travel to the radiator. You will see that the bypass valve (the sleeve around the thermostat) is blocking the bypass connection ensuring maximum flow to the radiator.

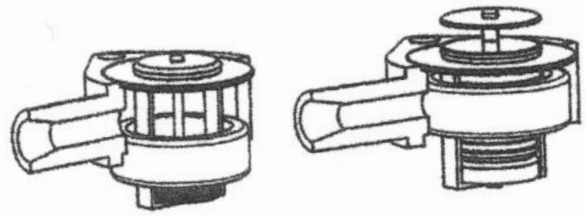
It appears that the TR thermostats operated in the same way but that these were now very scarce. Modern equivalents apparently do not have the bypass valve and the writer blames them for the overheating problems.

I gather the Mayflower system has a different flow pattern but I'm sure the principle is the same.

Regards Bob Fitsall

Triumph Roadster Club

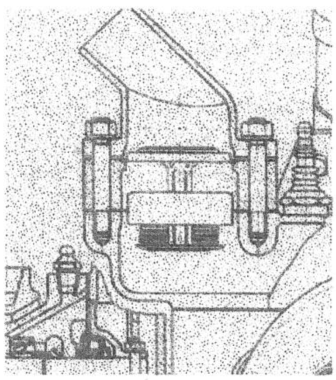
I have scanned and cut the drawing from the Standard Vanguard manual to show it clearly right:



Thermostat closed

Thermostat open and shutting off by-pass

I have accurately measured a new Mayflower housing and thermostat and redrawn them to scale assembled as shown right:



From page 8 of the Mayflower Service Instruction Manual

Reading through the manual it quite clearly shows the valve type of thermostat being used and also goes on to say" . . . A limited amount of water continues to circulate through the bypass even after the thermostat valve is fully open..."

Water Elbow Repair - Rob Davies, Flower Power, Summer 2018

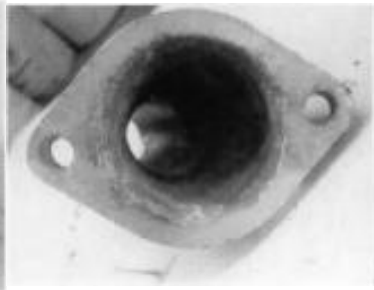
The subject of this article is the restoration of a badly corroded water elbow. We have two elbows, but neither of them was particularly serviceable in their current state. We enquired whether Brian had any suitable replacements, but his response was negative.

This example has a great deal of pitting inside and out, resulting in a much-weakened 'neck', and probable leakage due to poor fitting of the hose.

The first job was to clean off all the 'crud', both inside and out. This involved scraping off oil and lime scale, until the part was relatively clean. Then it was given a bath in white vinegar for 48 hours and finally washed clean under the tap, giving the result shown here — completely lime scale free.

Next, I took a length of 28mm copper tube and cut it about 10mm longer than the length of the 'neck' of the housing. The copper was then annealed (softened by heating and then allowed to cool) with a blow torch, to make it possible for the end to be beaten into a lip. Once fitted into the neck, a judgement can be made about its final length and it can be cut as shown (to avoid restricting flow any more than necessary in the 'bell' of the housing).







Once I was happy with the fit, the sleeve was bonded to the housing using "Plastic Metal" — an epoxy based adhesive which is heat resistant to 130° C (so should cope with even a pressurised water system). The adhesive sets in around three minutes; after which more can be applied all around the neck of the casting, to smooth out all the pitting and improve the seal when a hose is attached. Again, once this has set it is then possible to fill the gap around the copper tube and the inside of the housing, to prevent turbulence and improve water flow.

When hardened (24 hours), the outside was then filed and smoothed with emery paper to produce a uniform surface for accepting a hose. The same should be done inside. The finishing touch was a coat of heat resistant paint, and the part looks as good as new!

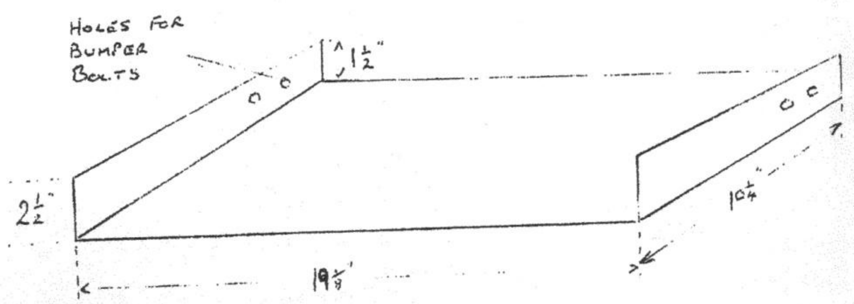
Now the mathematical stuff: The sleeve will inevitably reduce the internal volume of the neck — by my calculations the reduction of volume will be in the region of 19 per cent. However, the flow of water should be improved by having a much smoother passage through the neck area of the housing, with less turbulence caused by pitting. The bell area remains unaffected and should work as before.


Completed thermostat housing/elbow

Cooler running Flowers – Glenn Grossklags, Flower Power Summer 2003

Enclosed is a sketch of what I had made to seal the area below and in front of the radiator. It was manufactured by a local heating shop with metal that he uses to make heating ducts. For safety I had him fold the front and rear edges over so there were no sharp edges and to give additional stiffness to the unit. After it was done I measured where to drill holes and mounted it with the existing bumper bolts.

I have not used the car much since installing it but it seems to run cooler with the deflector in place. The measurements should be checked against your vehicle just in case there are production differences.



Glenn's sketch of his cooling pan

Fan belt – Henry Mulcahy, Flower Power, Winter/Spring 2016

Some time ago I noticed the fan belt was a bit loose. When I tried to adjust it I discovered the adjustment was at its maximum. As this was a fairly new belt I was surprised, so I replaced it with a new belt. This did not seem to make much difference so I came to the conclusion that the problem was that the pulleys were worn. I checked with the club but they were not available.

What to do? The prospect of making a longer adjustment bracket was not very appealing, and then I discovered I had an old Datsun engine with the alternator bracket still attached. There was a load of scope for adjustment on this bracket. I removed it.

There was a slight bend on the bracket. I squeezed it in a vice until it was nearly straight then a sharp whack with a hammer and it was fit for purpose. I did have to grind a small bit off where it fits next to the water pump.

I was now able to adjust the fan belt. However, I took an old fan belt with me to my local stores and asked if they had a toothed belt of the same size in stock. No, but they had two for me the next day!

I fitted one, yes I know it would be difficult to fit two but anyway it is one way I think of coping with worn pulleys. In the meantime, the spares secretary contacted me to let me know he had found a water pump pulley for me. A job for another day! The number of the toothed belt is MITSUBOSI Bx34.

Carburettor Flooding – Flower Power, Winter 1991

On starting the engine on my mayflower which had been standing for some weeks, I noticed excessive flooding of the carburettor causing the fuel to run from the manifold drain tube.

I checked the most obvious things: float, needle valve and valve stem yet did not cure the problem. Further investigation led me to the petrol pump and closer examination proved the vent in its base to be blocked. Once cleaned out it returned the carburetion to normal.

Fuel Pump pressure – Flower Power, Winter 1991

The fuel pump on the Flower should deliver 1.5 t o 2.5 lbs per inch pressure to the carburettor, if this is exceeded it will overcome the resistance provided by the needle valve in the float chamber of the carburettor. The pump pressure can be reduced by fitting extra packing between the pump body and the engine block thus reducing the stroke of the plunger.

Fuel Failures – Flower Power, Autumn 1990

Unfortunately the engine which refuses to start or stops when running can be difficult to diagnose, as the symptoms of fuel failure & electrical failures can be very similar.

If the engine is running, failure due to fuel starvation is not quite as sudden as an ignition fault and there will most likely be a series of spurts & stops before the final failure. Make sure there is petrol in the tank, gauges can stick or indicate that there is petrol when in reality there is none. Disconnect the petrol feed pipe at its union with the carburettor & either turn the engine by hand via the starting handle or use the hand primer on the petrol pump, check if petrol spurts from the pipe.

Fuel failure can be felt by use of the hand primer, an empty carburettor takes about four to five depressions of the lever, after which a considerable resistance to the hand primer can be felt, this usually indicates that the carburettor is full.

If there is fuel in the tank there are only three reasons for fuel not reaching the carburettor, a blockage in the fuel line to the pump, a pump failure, or a blockage between the pump and carburettor. Disconnect the tank to pump line, if blocked a high pressure airline can be used to blow out the obstruction, or the simple tyre pump works quite well. This method can also be used on the pipe between the pump and carburettor.

Rusting tanks can cause problems when rust particles move around and block the outlet union, removing the tank & flushing it out can help, but if it's too bad opening up the tank & cleaning, or replacing the tank itself may be the only option.

If the pump is suspected you will find that it consists of three main parts, two non- return valves & a diaphragm. The diaphragm is moved up & down by the action of a lever moved by a cam on the valve camshaft, each pulsation first causes suction on the pipe connected to the petrol tank, then pressure forces a small amount of petrol out towards the carburettor. Simple valves prevent petrol returning to the tank or being sucked back from the carburettor.

Examine the valves & diaphragm for signs of wear, damage, decomposition, distortion or damage, if none of these are seen a foreign body trapped beneath them may be the trouble. Leaving the car or petrol pump in a hot place without petrol in the pump can cause the valves to distort. The pump should be assembled with care and in accordance with the repair manual as failure to obtain the correct adjustment on the operating linkage can cause the fuel flow rate to be either excessive or insufficient for the engine speed.

The most likely cause of problems in the carburettor is blocked jets, in particularly the main jet which is most noticeable at high throttle openings. The compensating jet will cause problems at the pickup point between idling and full power. A blockage in the slow running jet affects the tick over and starting. Remove and blow jets clear rather than using any kind of pricker as this will enlarge the hole and affect the balance of the carburettor.

The float demand valve should be examined and cleaned. The condition of the float and its operation should also be checked. The union filter should stop dirt from entering the carburettor but its condition should be examined. If the fuel bowl and ducts of the carburettor are found to be contaminated with dirt the entire unit should be dismantled and cleaned in accordance with the service manual.

The condition of the manifold gaskets is also important as leaks here start in a small way affecting the mixture entering the cylinders and upset the slow running. As the leak increases it can cause the mixture to weaken to the extent where it will not ignite. A blocked fuel drain pipe can give rise to a pool of petrol forming in the manifold. This can cause an over rich mixture which will over choke and stop the engine.

Do not forget the exhaust system, it has been known for the engine to stop as a result of the tail pipe becoming blocked through reversing into a grass bank, etc, or pranksters blocking it for you!

Readers are reminded that extreme care and caution should be used when dealing with petrol. The battery should be removed to prevent the possibility of sparks from the electric system.

Fitting An Electric Fuel Pump – Henry Mulcahy, Flower Power, Winter 2012

When I first got my Mayflower I thought I had a fuel pump problem. I learned that I could use the top part of the fuel pump and diaphragm but not the spring as fitted to the Perkins 4.236 engine in the Massey Ferguson 100-10 series. This however did not solve the problem. I discovered that the problem was what we used to call vapour lock or vaporization, very common in the Ford 10 cwt Pickup and Van.

I decided that the problem was the heat from the engine was causing the problem at the fuel pump. An electric pump seemed to be the answer. As I did not want a very strong pump in case of flooding I went for an S U Pump as fitted to the Morris Minor. This is an SU Pump with electronic insides, positive or negative earth, written on the side of the box 1.5 lbs sq in.

Using a piece 3 angle x 3 x 3 as bracket I made a cardboard template of the bottom of the pump and transferred it to the bracket. This I found was the most difficult part of the job. Having drilled the bracket from the template markings I had to do it again as there was not enough clearance for the mounting bolts and the pump outlet must be higher than the inlet. I got a steel braided fuel pipe as fitted from the pump to the carb on the Morris Minor.

What I could have also got was the olive and nut to fit on the inlet side of the pump as the olive is soldered on to the pipe, I already had these from a scrap MM.

I positioned the pump on the inner wing using the new fuel pipe attached to a piece of copper pipe about two inches at the carb. I drilled and bolted the bracket where the jack would have been located. A previous owner had fitted a plastic pipe at the inlet of the old pump so I disconnected this and having dipped it into a mug of hot water I was able to attach it to a new pipe 1 made up for the inlet side of the new pump and secured it with a jubilee clip.

Having got all my connections tight I ran a wire from the pump to a simple pull on and off switch located on the dash on the driver's side and another wire from the battery to the switch. To date this has worked very well, any problems have not been from vaporization. I should of course connect the pump to the ignition switch or somewhere controlled by the key as I have a habit of not switching off the pump when switching off the engine and not switching on the pump when starting.

Downdraught SOLEX Carburettor Model 30 FAIO-2

THE STARTER

The Progressive Solex Starter is designed to be effective in all climates, but caters especially for countries where abnormally low temperatures arc a seasonal feature, and with the objective of providing fuel control productive of clean acceleration under load immediately after the engine is started from cold.

This device will be seen on the extreme left of the diagrammatic section, and is recognisable by the captions "Rich Position" and "Intermediate Position".

It is operated by a dashboard control, and the procedure for starting from cold is as follows :

(i) (i)Pull the dashboard knob out fully to the "Rich Position" . Operate the electric starter button *without touching the foot throttle,* i.e., the carburettor butterfly *must* be kept closed to the normal idling position, the engine will start at once, always providing that the battery is efficient and the grade of sump oil suitable for the conditions.

(ii) When the engine is started, push in the dashboard control to the "Intermediate Position" . This is reached when a marked resistance to the push movement is felt, created by the engagement of the spring loaded ball with a shallow cavity in the actuating lever "sl".

(iii) At this stage the engine may be left to warm up on "fast-idle", but preferably

(iv) Drive away, and as the engine warms up, push the dashboard control *gradually* home, when the Solex Starter unit will then be out of action.

A study of the following will quickly allow the driver to operate the Solex Starter unit so that the engine is warmed up with a minimum of rich mixture.

FUNCTIONING

The lever "si" is fitted to a shaft located centrally in the Solex Starter unit which is, in fact, a mixing chamber for the air and petrol necessary to ensure immediate starting under the severest conditions.

At the remote end of the shaft is mounted a disc “SV” termed the "starter valve". It forms an inner wail of the mixing chamber, and when not in operation, presents a blank face to the inlet duct "D" and the outlet duct "C-d".

Midway along the shaft is another disc “T” forming the outer wall of the mixing chamber.

Both discs arc designed with suitable holes drilled through them to regulate the passage of petrol and mixture emulsion governed by the flow of air via the air jet "Ga", and petrol calibrated by the petrol jet "Gs".

When the dashboard control (linked, of course, to the starter lever "si") is pulled fully out, the shaft revolves so that the holes in the starter valve "S " register with the ducts "D" “C” (Rich Position), the spring "Y" holding the valve positively in position.

The engine can now be started.

The butterfly "V" being in the closed position, the engine suction takes effect in the duct "d-C" , and is transmitted to the disc "T" via the hole in the starter valve. The disc "T", originally held in position by the spring "X" of predetermined strength, is drawn along the shaft until it reaches the limit of its housing. Air then enters via "Ga", but in restricted volume, controlled by the clearance between the disc and its original seating.

Meantime, the depression or suction, in the starter mixing chamber lifts petrol from the well above "Gs", whence it travels to the mixing chamber via the channel indicated by the dotted lines, there to mix with the air entering via "Ga", the resultant emulsified mixture passing along the duct "C-d" to the engine.

By this means a rich, but well disintegrated mixture is inspired by the engine, ensuring immediate starting at temperatures well below freezing point.

The dashboard control is now pushed in half-way, as the car is driven away, and the Solex Starter discs now revolve to the "intermediate Position".

It will be noted that whilst the rotation of the valve "SV" still leaves uninterrupted egress of mixture from the mixing chamber, the "characteristic" of the mixture is altered because of the disposition of a smaller "dished" hole in the valve "SV" registering with the duct "D" , and a large hole in the disc "T", allowing air to the full capacity of "Ga" to enter the mixing chamber.

The dashboard-control is *gradually* pushed fully home as the engine temperature rises.

N.B.—In pushing home the dashboard control, the movement should be *gradual* and the fallowing sequence of events will explain why.

When driving away the suction at point "d" is relieved progressively as the throttle opens, but for the same reason air passing down the choke tube "K" to the engine creates suction on the hole in the choke tube communicating with the starter mixing chamber.

The act of pushing the dashboard control in *gradually* allows the suction at this point to become effective, so that mixture from the starter unit, drawn through the hole in the choke tube, is retarded in the weakening process as the starter lever moves to the fully-home position, i.e., the car is driven away with sufficient "support" from the Solex Starter unit to ensure clean acceleration without risk of "spitting-back" or the engine stalling.

N.B. - The diagram shows "Ga" as a removable unit, but in many cases "Ga" is represented by a hole of calculated area in the casting.

NORMAL RUNNING

For normal running above idling speed the engine is provided with the correct mixture for all speeds by the main spraying assembly. Petrol is provided by the main jet (G) and the main air supply for disintegration of the petrol by the choke lube (K). The correct balance of mixture is further automatically maintained by an additional air supply in the form of a calibrated jet, called the air correction jet (a).

MAIN CARBURETTOR FUNCTION

Study now the diagram in conjunction with the following description.

The float chamber, is of conventional design carrying a float which closes a needle valve NV when the float chamber is full of petrol.

Petrol from the float chamber passes through the main jet (G) into the spraying well (A) via the reserve well (v) where it meets air drawn downwards via the calibrated air correction jet (a). This passes out through the emulsion holes (ch) into the annulus, where an emulsion is formed with the petrol, and the resultant mixture rises to the spraying orifices, of which two are shown (oo) in the waist of the choke tube (K). Here the emulsion is absorbed by the main air current and passes down to the induction pipe of the engine past the Butterfly throttle (V).

SETTING THE IDLING

The idling is effected by petrol drawn from the reserve well (v) via a small channel which will be seen emerging therefrom immediately above the larger horizontal lead from the main jet. This it will be noted turns upwards and eventually passes through the pilot jet (g) into the downwardly disposed tract communicating with the idling orifice (io) controlled by the spring-loaded and knurled-headed taper screw (W).

It will be noted that this orifice is on the engine, *i.e.,* suctional, side of throttle butterfly. A branch lead communicates with another orifice (bp) which enters the airway slightly on the atmospheric side of the almost closed throttle.

When the throttle is in the idling position, this duct, which we term the bypass, acts as an air bleed upon the idling petrol supply and therefore prevents over-richness when the engine is actually idling. Directly the throttle opens, the butterfly passes to the atmospheric side of the by-pass orifice, so that both (bp) and (io) function as petrol delivery orifices, thereby proportionately enrichening the output at the transfer position between the pilot and main supplies and preventing lean flat spot which might otherwise occur.

DISMANTLING THE CARBURETTOR

It will be seen that the pilot jet (g), the main jet (G), the starter air jet (Ga), and the starter petrol jet (Gs) are all accessible from the exterior, without dismantling the carburettor.

Access to the interior is easy. The air cleaner must, of course, be removed, when, by removing the screws that secure the top casting to the remainder of the carburettor, access is obtained to the air correction jet (a) and the pilot jet air bleed (u).

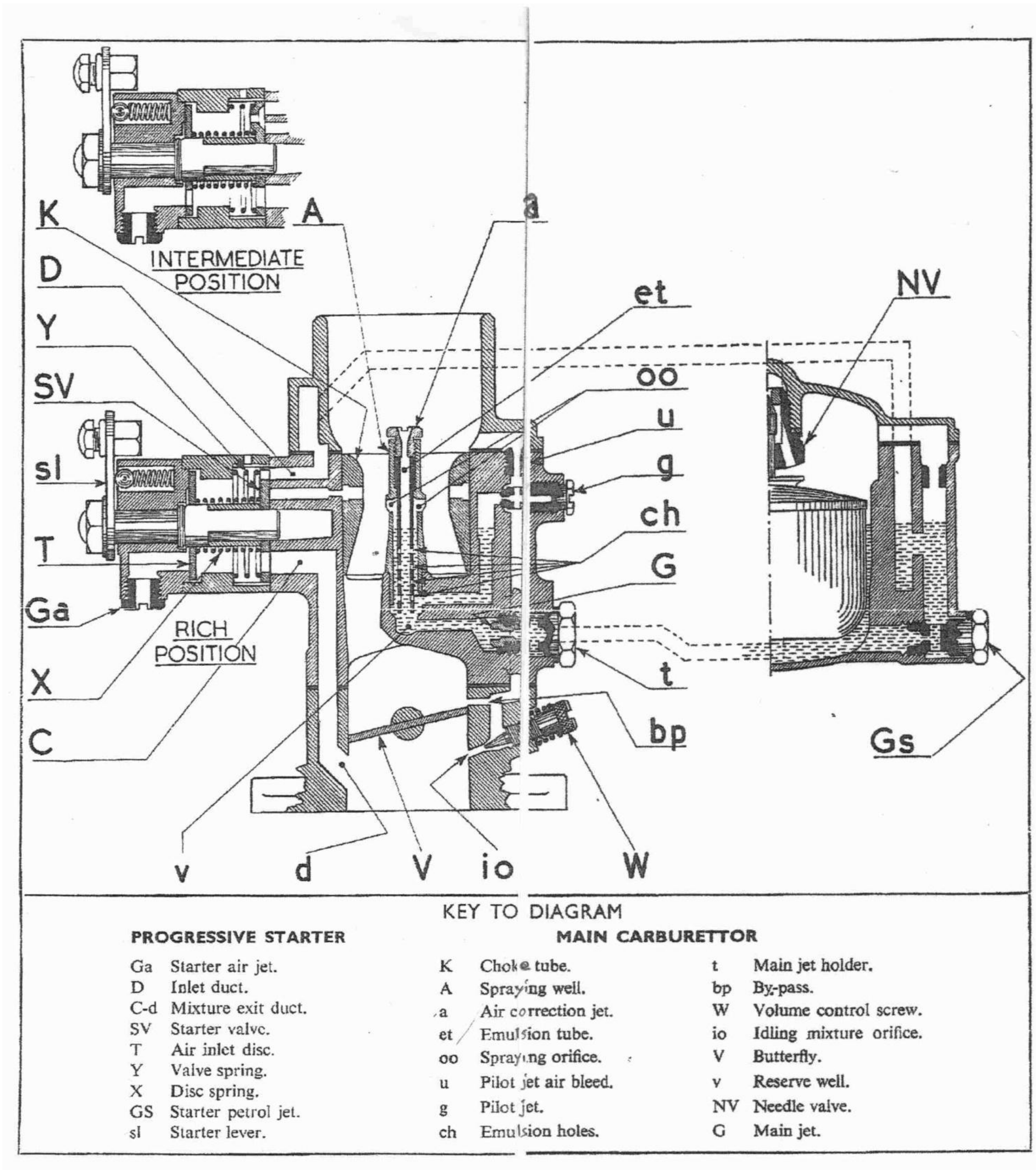
SPECIAL NOTE

The growth in popularity overseas of British cars depends in some countries upon the ease with which they can be started from cold at very low temperatures.

In many parts of Canada, for instance, over 40 deg. F. below freezing point is usual in the winter. The "Progressive Zero" starter which this leaflet describes, will, so far as carburetion is concerned, provide the correct mixture for starting in a few seconds at such temperatures if the instructions are closely followed.

It is to be emphasised that starting from cold if a Solex is correctly "set" to suit the engine, should never present any difficulty, but it is important to make sure that all the following details are in order:

(1) BATTERY well charged. If the voltage is low, all the energy may be absorbed by the electric starter, leaving none to provide a spark at the plug electrodes. At low temperatures battery power drops off.
(2) SUMP OIL. The grades recommended by the makers of the car should be used according to the season. Over-thick oil will prevent starts.
(3) CONDITION and SPACING of the contact breaker point in the distributor head is most important.
(4) PLUGS must be in good condition, A "short" high up in the body will prevent easy starting and, furthermore, produce all the functional effects of retarded ignition timing, with consequent heavy fuel consumption. The plug points MUST be kept clean and spaced in accordance with the engine makers' recommendation.
(5) TAPPPET adjustment is often too long neglected. A check every 5,000 miles is well worth while.
(6) VALVES mostly have a good life, but every 5,000 miles turn the engine over by hand. Weak compression in one or more cylinders means that the valves require attention. Remember that where the compression can escape, air in an unknown quantity can leak in and this will, if neglected, cause difficult starting and other troubles.



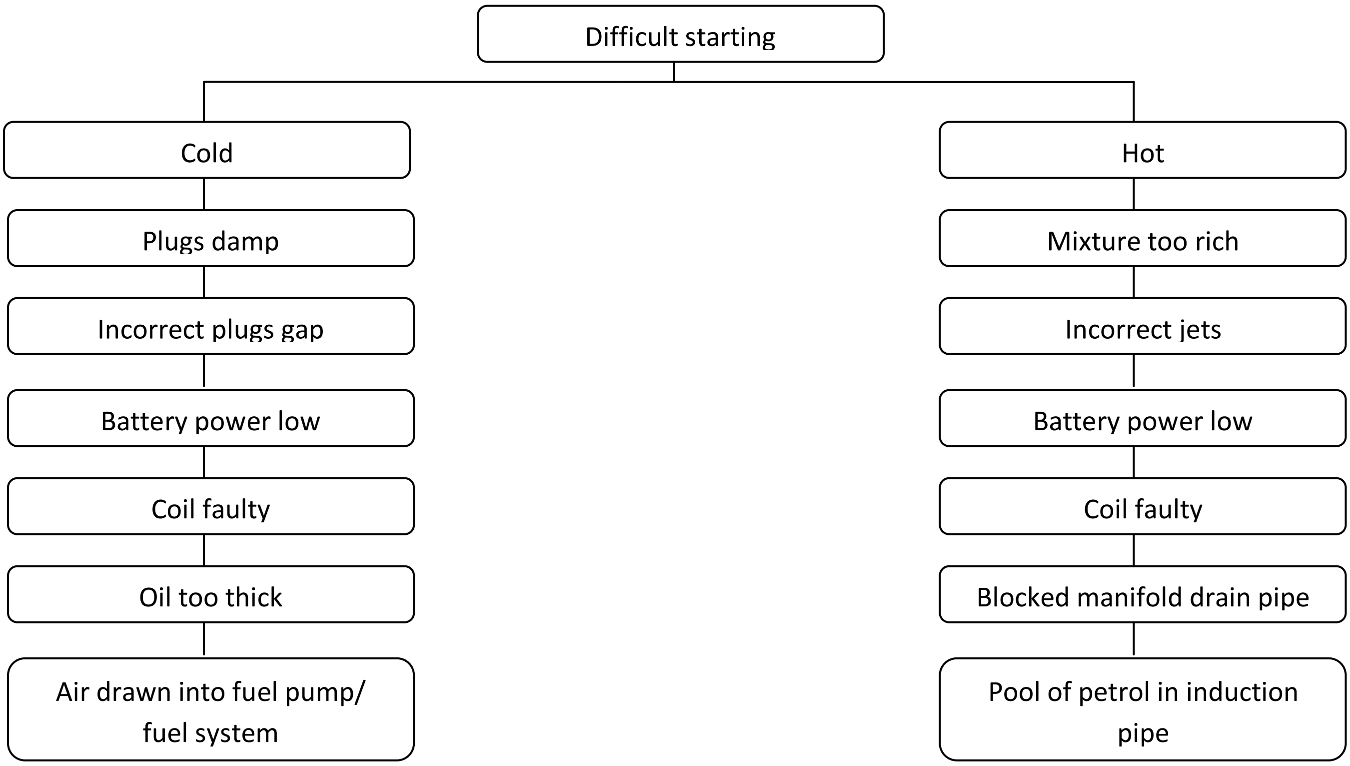
Fault Diagnosis Flow Charts For Engine & Carburettor – Flower Power Summer 1990

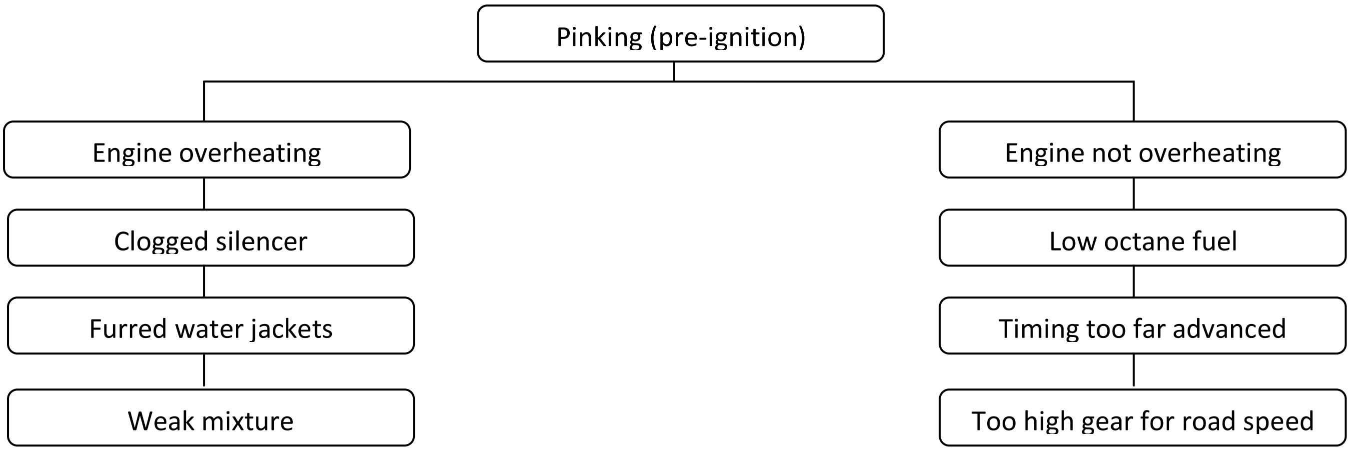
Poor Acceleration & Flat Spot

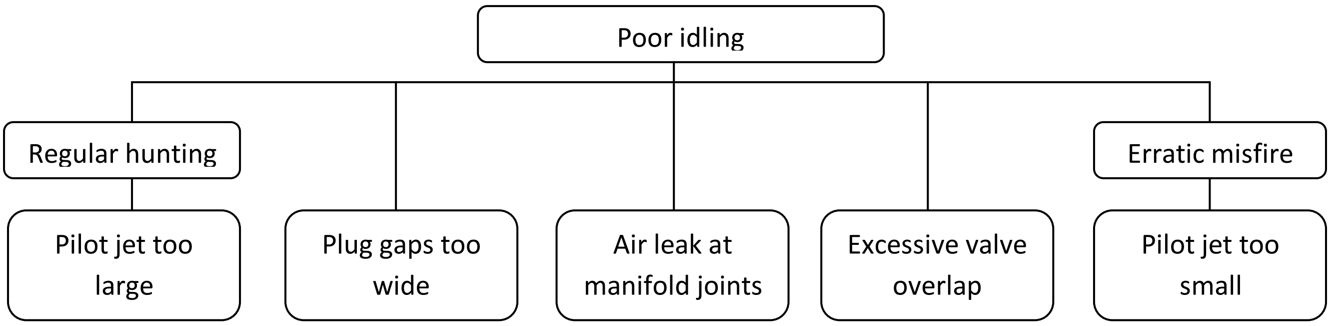
- Carburettor
  - Weak mixture
  - Choke jet too large
  - Main jet too small
  - Faulty fuel pump
- Engine
  - Faulty hot spot
  - Excessive overlap
  - Engine overcooled (best at 180° F)
- Ignition
  - Plug gaps too wide
  - Weak spark
  - Coil/condenser faulty
  - Distributor faulty
  - Auto advance faulty
  - Timing too far advanced (if pinking)
  - Timing retarded (not pinking)

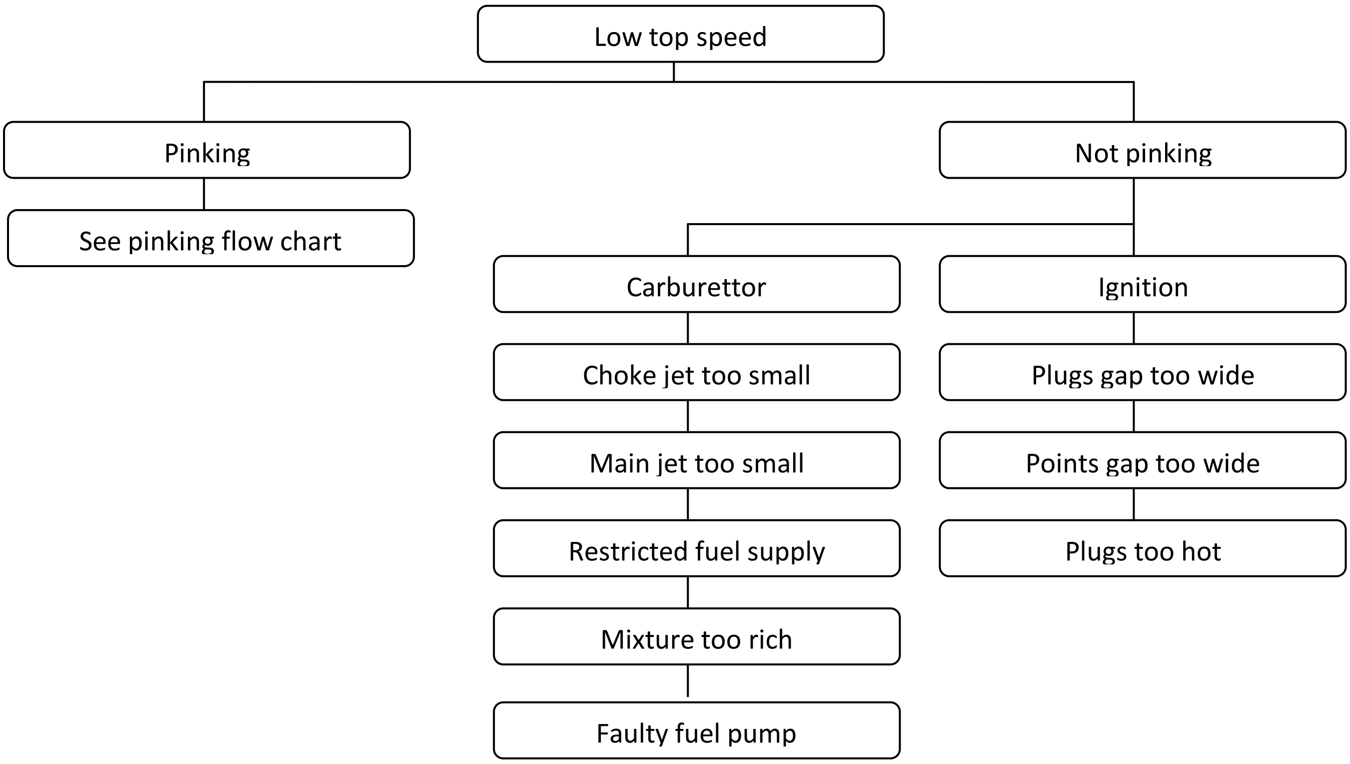
Excessive Fuel Consumption

- Engine
  - Excessive vibration
  - Weak valve springs
  - Sunken valve seats
  - Silencer clogged
- Electrical
  - Battery power low
  - Retarded timing
  - Weak spark
  - Auto advance sticking
  - Condenser faulty
  - Plug gaps too wide
- Carburettor
  - Mixture too rich
  - Carburettor flooding
  - Choke movement incorrect
  - Air cleaner clogged


Difficult starting
Cold
Plugs damp
Incorrect plugs gap
Battery power low
Coil faulty
Oil too thick
Air drawn into fuel pump/ fuel system
Hot
Mixture too rich
Incorrect jets
Battery power low
Coil faulty
Blocked manifold drain pipe
Pool of petrol in induction pipe


Pinking (pre-ignition)
Engine overheating
Clogged silencer
Furred water jackets
Weak mixture
Engine not overheating
Low octane fuel
Timing too far advanced
Too high gear for road speed

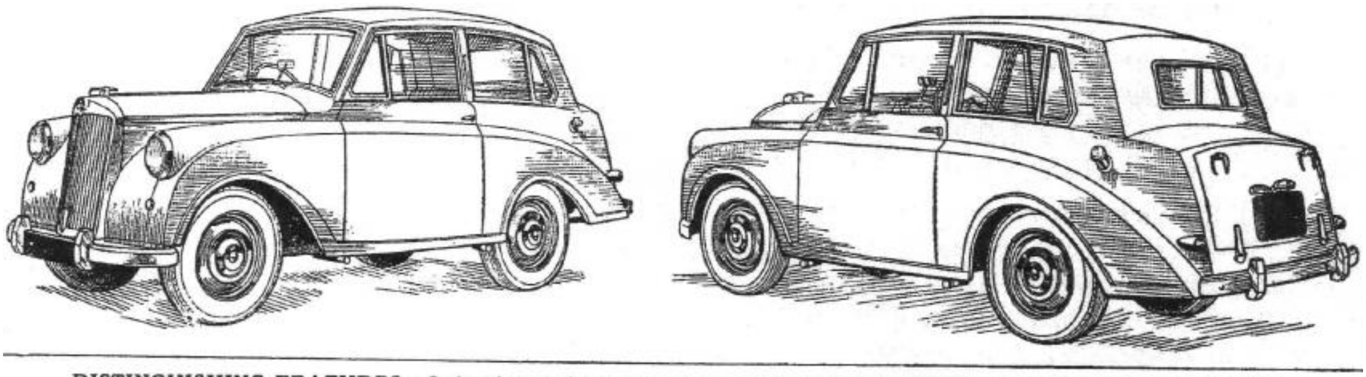

Poor idling
Regular hunting
Pilot jet too large
Plug gaps too wide
Air leak at manifold joints
Excessive valve overlap
Erratic misfire
Pilot jet too small



Trader Service Data No 180 – Motor Trader 1951, Flower Power Spring 1988

Triumph Mayflower Type 1200T 1950 - 51

Manufacturers: Standard Motor Co., Ltd., Banner Lane {Regd. Offices), Coventry.
Sales and Service: Fletchamstead Highway, Coventry.



DISTINGUISHING FEATURES—Only change in outward appearance has been fitting of block lenses to headlamps

Introduced at the 1949 Earls Court Motor Show, the Mayflower came into production in May, 1950. Original in styling, the car has an integral chassis and body. Independent front suspension with coil springs, a side-valve engine based on that of the pre-war Standard Ten, and a transmission on the same lines as the Standard Vanguard. Engineering changes introduced since the car was first produced are listed here.

Commission numbers (car serial numbers) starting at 1, prefixed TT and suffixed D L , indicating body type, are stamped on a plate on the near side of the scuttle under the bonnet. Engine serial numbers, also starting at 1, prefixed TT and suffixed E, are stamped on a boss at the offside rear of the engine below the oil filler. Engine and car numbers do not necessarily correspond.

Special tools have been designed to speed up certain operations, and officially approved by the Standard Motor Co. They are available from V. L. Churchill & Co., Ltd., 27-34 Walnut Tree Walk, Kennington, London, S. E. 11. Those considered most important are listed here.

SPECIAL TOOLS

	Tool No.
ENGINE	
Tappet spanners (D/E). Set of three comprising ½in A/F straight × 7/16in A/F cranked; 7/16in A/F straight × ½in A/F cranked; 11/32in A/F straight × 13/32in A/F cranked	M 854 A, B, C
GEARBOX	
Mainshaft spring ring remover ...	20SM 69
Mainshaft spring ring installer... ...	20SM 46
Mainshaft assembling tool	20SM 65
Layshaft needle bearing retainer ...	20SM 77
Drawer with adapters for primary shaft, mainshaft and axle half-shaft bearings	20SM 4615
REAR AXLE	
Bevel pinion shaft bearing inner race drawer with adapters	20SM 85
Bevel pinion shaft bearing outer race installer	M 70
Bevel pinion bearing gauge (for meshing shims)	M 84
Final drive housing spreader	20SM 4220

Prefix 20SM indicates suitability (with or without adapters) for Mayflower and Vanguard.

American S. A. E. threads and hexagons are used throughout, except on some proprietary components.

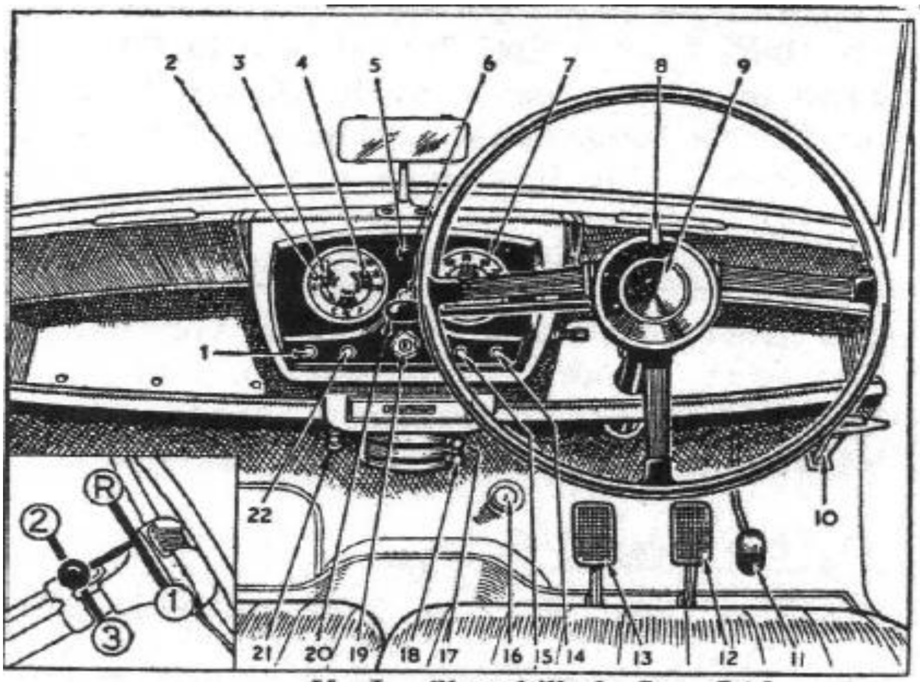
ENGINEERING CHANGES

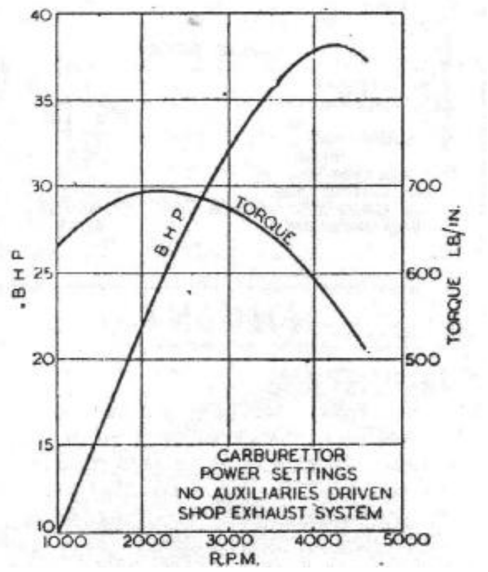
	Comm. No. (Prefix TT)
Longer rear springs fitted, with new spring plates and longer stroke shock absorbers	451
Rear springs stiffened (thicker leaf substituted)	928
Oil relief valve changed, ball to plunger. New plug	1356 E
Camshaft, and distributor drive gear, changed from casting to forging. Must be replaced together	1408 E
Rear spring changed, ten leaves to eight thicker leaves	3071
Oil bleed holes in con rod big ends deleted	3215 E
Headlamps changed to double dip, with block lenses and 42/36 watt bulbs ...	3264
Fuel pump with hand primer introduced	3407 E
Wheels with larger offset (1.125in instead of .63in) introduced. Track increased	5535*
Engine front mounting to frame, bolts changed to studs. Slotted mountings introduced (interchangeable) ...	6010 E
Fan and pulley changed, integral to separate. *New assembly must be used with new dynamo*	6109 E†
New (higher output) dynamo and new control box introduced. *New control box must not be used with old dynamo, but new dynamo can be used with old control box*	6155 E‡
Oil level in rear axle raised to bottom of filler threads. Dipstick deleted ...	6813
Manifold clamps strengthened. Longer studs	Pending
Differential gear and pinion thrust washers introduced	Pending
Screenwiper, more powerful motor introduced. *New drive (steel pinions) must be fitted with new motor...* ...	Pending

* Except comm. Nos. 5547-5552.
† At comm No. 6131 (chassis).
‡ At comm No. 6134 (chassis).

Instruments and Controls:

1. Choke
2. Petrol gauge
3. Oil pressure gauge
4. Water temperature gauge
5. Ignition warning light
6. Heater motor switch
7. Speedometer
8. Trafficator switch
9. Horn push
10. Handbrake
11. Accelerator
12. Brake pedal
13. Clutch pedal
14. Starter switch
15. Screenwiper switch
16. Dipper switch
17. Heater air control
18. Demister control
19. Lighting and ignition switch
20. Gear lever
21. Scuttle ventilator control
22. Panel and roof lamp switch





FUEL SYSTEM DATA

Carburettor :	make	Solex
	type	30 FAI
Settings :	Choke tube	21
	Main jet	105
	Air correction jet	220
	Pilot jet	45
	Starter jet	120
Air cleaner : home :	make	AC oil wet
	type	1579553
export:	make	AC oil bath
	type	1579559
Fuel pump :	make	AC mechanical
	type	Y—1524712
	pressure	1½—2 lb

COOLING SYSTEM

Pump and fan. Non-adjustable bellows thermostat in housing bolted up to cylinder head with outlet elbow. Pump has spring-loaded carbon and rubber seal unit.

Pump can be removed with radiator in place. Detach fan (noting balancing plate, if fitted), and take off two nuts and one setscrew holding bearing housing to pump body.

T o dismantle pump remove impeller (through-bolt) with seal unit. Draw off pulley (Woodruff key) and extract spring ring retaining outer bearing in housing. Support housing and press out shaft and ball bearings, with distance- piece between inner races. Bearings are interchangeable.

When reassembling, press inner bearing on to shaft against spring ring, followed by distance-piece and outer bearing (both bearings must have seal outwards). Fit nibber thrower ring on shaft behind inner bearing, and press assembly into housing. Press seal assembly into impeller and, before fitting impeller, smear jointing compound in bore and on through-bolt. If this is not done, water tends to leak along shaft.

When refitting fan note that balancing plate (if fitted) has 1/8in hole which must correspond with similar hole in fan.

Adjust fan belt by swinging dynamo until there is about 3/4in movement either way on vertical run of belt.