

Section K3

Fuel pumps

Two types of fuel pump assemblies are fitted depending upon the specification of the vehicle.

Either a dual pump type of unit comprising twin S.U. electric pumps mounted onto a common diecast body (fitted to the majority of cars) or a single Pierburg rotary vane electric pump, is fitted.

Twin S.U. electric fuel pumps (see Fig. K11)

The dual pump assembly is fitted beneath the car on the right-hand side above the drive-shaft.

Each pump has three main elements, the body, the solenoid assembly and the contact breaker assembly.

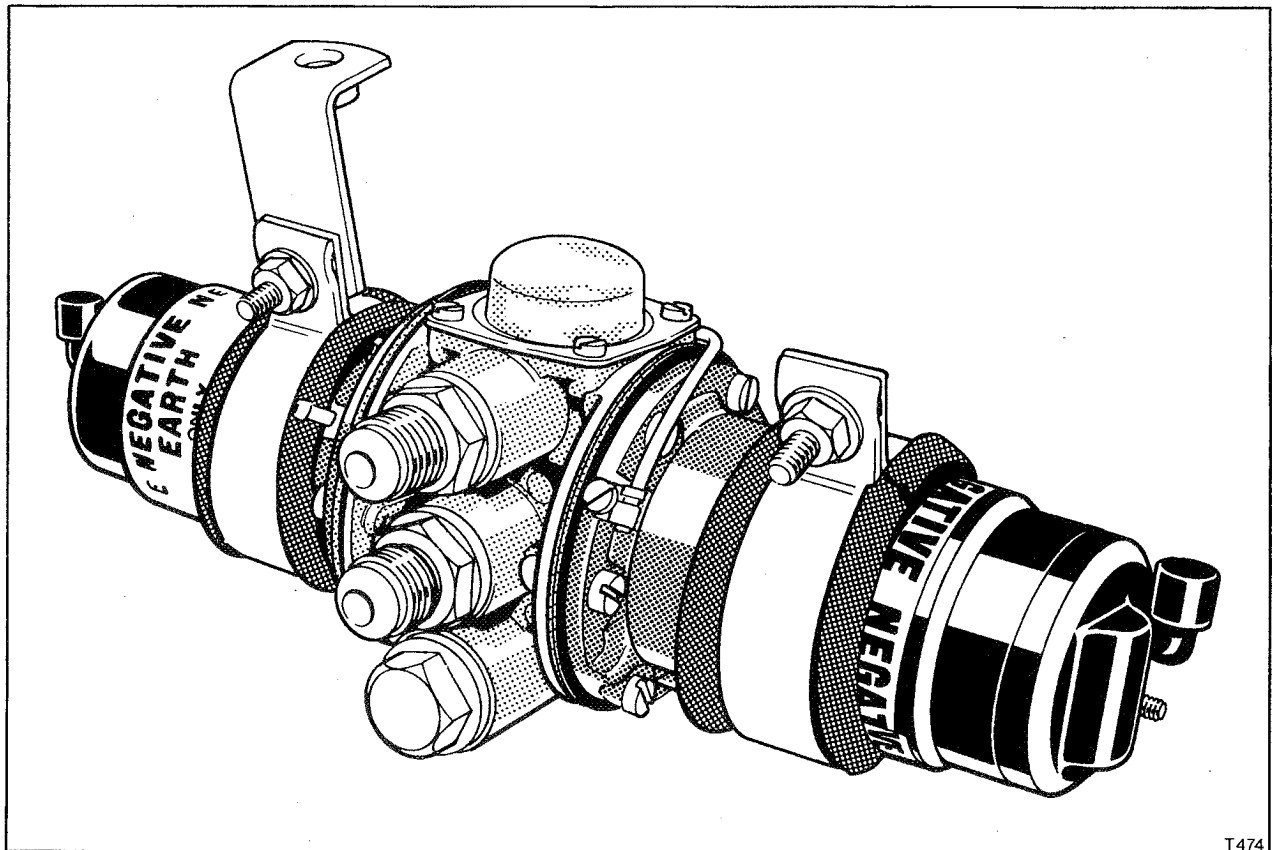
Operation (see Fig. K12)

With the pump at rest the twin set of tungsten points are in contact. When the ignition is switched on and

the engine oil pressure inhibit circuit by-passed, current passes from the terminal stud through the solenoid assembly and contact breaker points to earth, thus energising the solenoid and attracting the armature. The armature, together with the diaphragm assembly then reacts by moving towards the solenoid against pressure from the armature spring and in doing so, draws fuel through the inlet valve into the pumping chamber.

When the armature is nearing the end of its stroke the 'toggle over' mechanism operates and the outer rocker moves rapidly backwards, separating the contact breaker points and breaking the electrical circuit. The armature and diaphragm then move away from the solenoid due to the reaction of the compressed armature spring and thereby, force fuel through the delivery valve.

As the armature nears the end of its pumping stroke the 'toggle over' mechanism again operates,



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Fig. K11 S.U. fuel pumps assembly

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the tungsten points make contact again and the cycle of operations is repeated.

Note

Switching on the ignition does not necessarily activate the fuel pumps as an oil pressure interlock circuit is fitted, this inhibit circuit prevents operation of the fuel pumps until there is engine oil pressure. To by-pass the inhibit circuit for test purposes, disconnect the brown/yellow cable from the outer oil pressure switch situated on the engine oil filter elbow.

S.U. fuel pumps assembly - To remove (see Fig. K13)

1. Drive the car onto a ramp.
2. Ensure that the parking brake is firmly applied.

3. Remove the gear range selector thermal cut-out from the fuseboard.

4. Disconnect the battery.

5. Carry out the necessary workshop safety precautions.

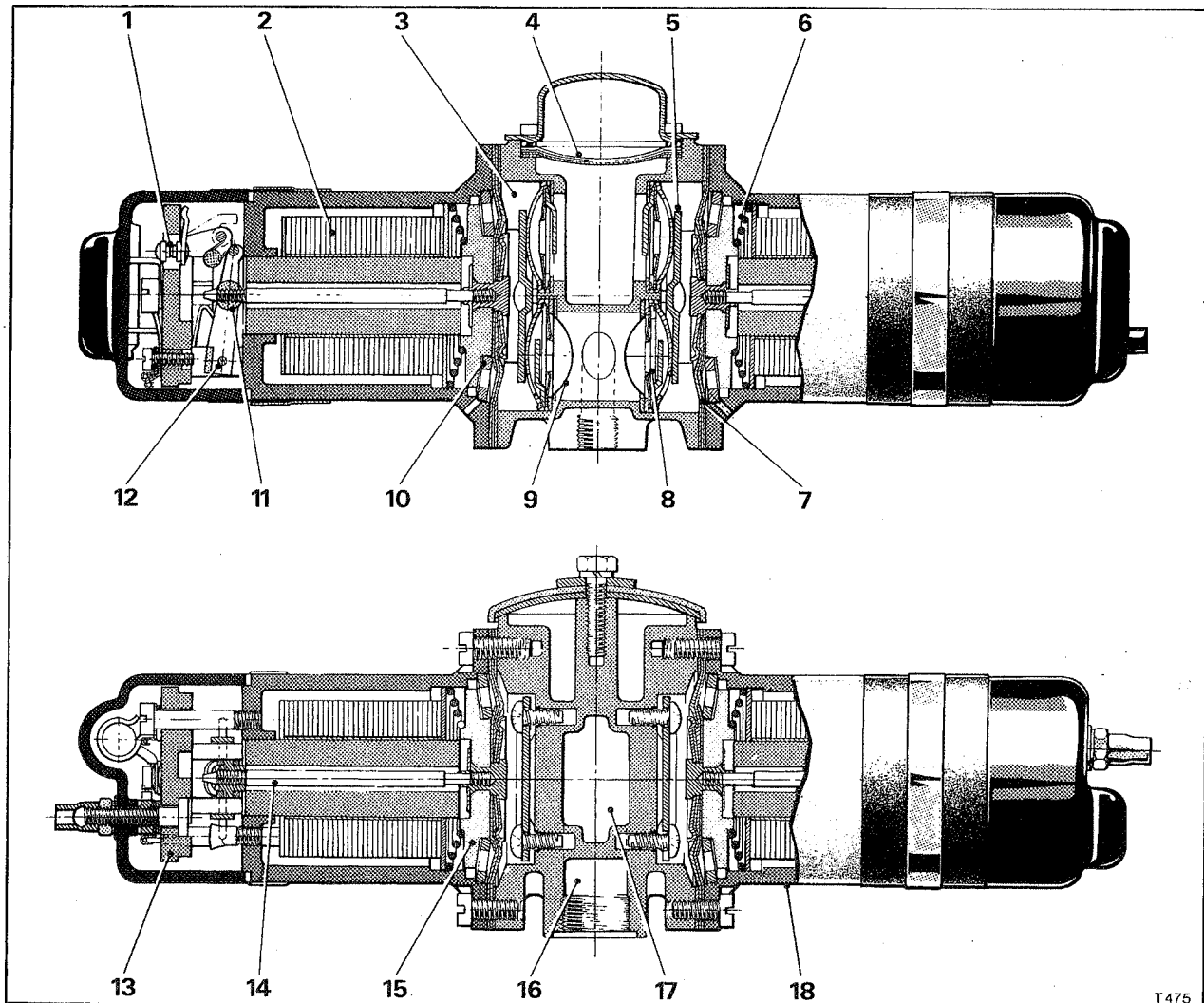
6. Raise the ramp to a convenient working height.

7. Withdraw the protective rubber cover from both ends of the fuel pump assembly.

8. Unscrew and remove the nut securing the white/pink electrical feed cable to the terminal stud; withdraw the cable. Repeat the operation at the other end of the fuel pump assembly.

Note

The suppressor lead is fitted to the rear fuel pump terminal stud.



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Fig. K12 Operation of S.U. fuel pumps assembly

- | | | |
|----------------------------|-------------------------|---------------------|
| 1 Tungsten points | 7 Diaphragm assembly | 13 Pedestal |
| 2 Magnet coil | 8 Inlet valve | 14 Armature spindle |
| 3 Pumping chamber | 9 Filter | 15 Armature |
| 4 Flow smoothing diaphragm | 10 Armature guide plate | 16 Common outlet |
| 5 Clamp plate | 11 Trunnion | 17 Delivery chamber |
| 6 Armature spring | 12 Rocker spindle | 18 Coil housing |

9. Using a $\frac{3}{8}$ in. A/F spanner unscrew and detach the inlet and outlet pipe adapters from the pump body unions.

Suitably blank all open connections.

10. Using a $\frac{3}{8}$ in. A/F spanner unscrew the nut situated above the front mounting, withdraw the bolt and collect the two washers (one on either side of the bracket).

Release the earth braid from the bolt.

11. Hold the pump assembly and using a $\frac{1}{2}$ in. A/F spanner unscrew the two nuts retaining the pump assembly to the mounting bracket. Collect the washers and withdraw the suppressor from the rear mounting stud.

12. Partially withdraw the pump assembly and detach the polythene breather tube from both pump bodies. Completely withdraw the pump assembly.

S.U. fuel pumps assembly - To fit

Fit the fuel pumps assembly by reversing the procedure given for removal, noting the following points.

1. Ensure that the suppressor is fitted to the rear pump mounting stud and the cable to the rear pump terminal stud.

2. Ensure that the polythene breather tubes and protective rubber covers are in a good condition.

S.U. fuel pumps assembly - To dismantle (see Fig. K14)

All faulty fuel pump assemblies should be reconditioned by the manufacturer and therefore, when an assembly is found faulty it is advisable to replace it with either a new or reconditioned unit. If this is not possible however, the fault should be rectified in the existing assembly.

Reconditioned pump units and parts can be obtained from the Parts Department at Crewe. Pump assembly mounting nuts will be supplied with a new or reconditioned assembly therefore, the nuts used with the displaced unit should be screwed onto their respective threads and returned with the assembly.

Neither inlet nor outlet unions are supplied with reconditioned pumps therefore, the unions should be removed from the displaced assembly and retained for fitting to the new assembly.

1. Remove the pump assembly from the car.
2. Unscrew and remove the $\frac{3}{8}$ in. A/F nut securing the pump mounting bands. Withdraw both front and rear mounting bands.
3. From the pumps, remove the sponge rubber strip that is used to seat the mounting band.
4. Unscrew the cheesehead screws securing the earth braid to the pumps.

The remainder of the dismantling operations refer to **one** pump unit and therefore, they must also be carried out on the other pump unit if the complete assembly is to be dismantled.

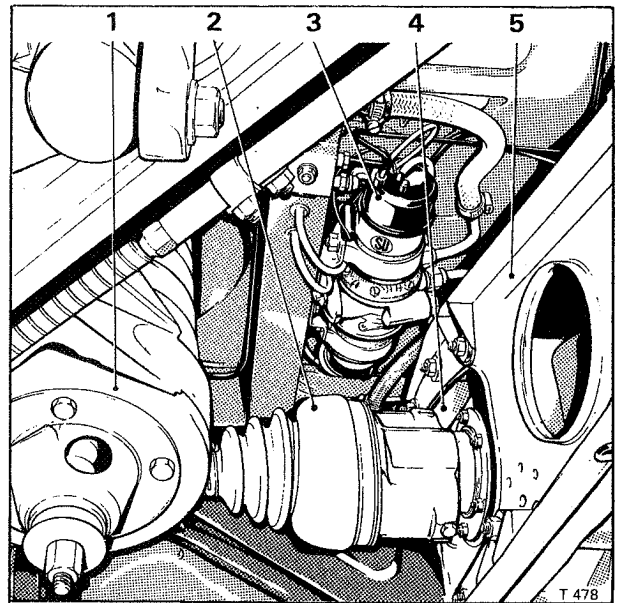


Fig. K13 S.U. fuel pumps in position

- 1 Rear suspension unit
- 2 Half-shaft ball and trunnion joint
- 3 Twin S.U. fuel pump assembly
- 4 Final drive casing
- 5 Torque arm

Contact breaker (see Fig. K15)

5. Remove the tape seals and rubber sealing band.
6. Unscrew the terminal nut and collect the shakeproof washer.
7. Withdraw the end cover.
8. Unscrew the small cheesehead screw situated at the lower end of the unit, completely withdraw the screw and collect the washer. This will release both the black electrical cable to the condenser and the long black lead to the coil. The contact blade that carries one half of the tungsten points can be withdrawn.

Pedestal and rocker (see Fig. K15)

9. Withdraw the rubber washer from the terminal stud, unscrew the terminal nut and remove the lead washer. The lead washer will have flattened and spread into the terminal thread, it should be carefully removed using cutting pliers or a knife.
10. Unscrew the two 2BA screws retaining the pedestal to the coil housing; remove the earth terminal tag from the left-hand screw and spring washer from both screws.
11. Tilt the pedestal and withdraw the terminal stud thus freeing the red electrical cable to the condenser (this will allow the condenser to be removed) and the short black lead to the coil.
12. The pedestal can now be removed with the rocker mechanism attached.
13. Push out the hardened steel pin which holds the rocker mechanism to the pedestal and separate the two parts.

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Coil housing and diaphragm (see Fig. K16)

14. Unscrew the cheesehead screws that secure the pumping unit coil housing to the pump body. Use a thick-bladed screwdriver to avoid damaging the screws heads.

15. The coil housing should be carefully withdrawn from the pump body.

16. Unscrew the diaphragm and spindle assembly by rotating the diaphragm in an anti-clockwise direction until the armature spring pushes the

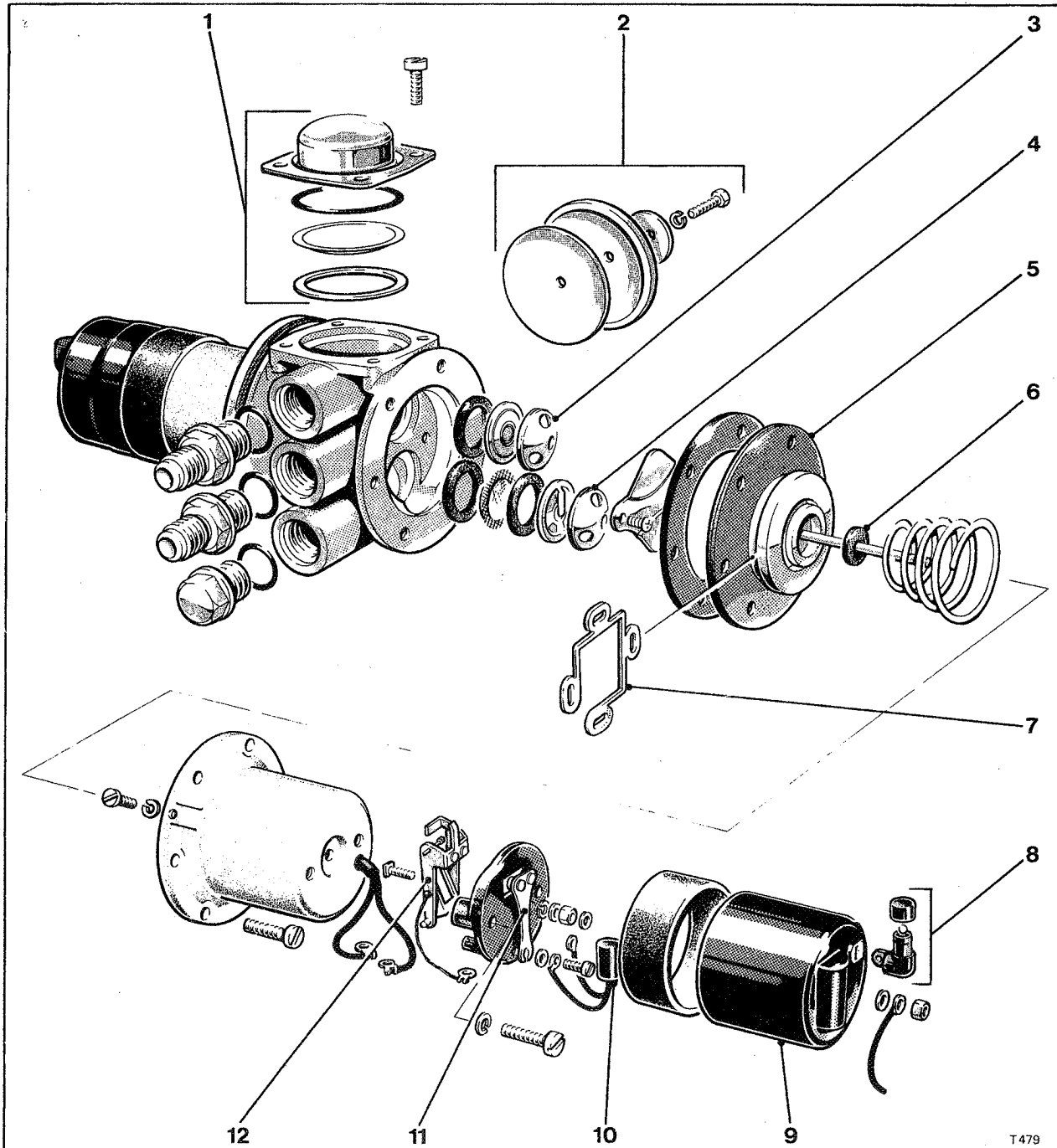


Fig. K14 S.U. fuel pumps assembly - Exploded

- | | |
|-------------------------|---------------------|
| 1 Flow smoothing device | 7 Nylon guide plate |
| 2 Inlet air bottle | 8 Vent valve |
| 3 Outlet valve | 9 End cover |
| 4 Inlet valve | 10 Condenser |
| 5 Diaphragm | 11 Contact blade |
| 6 Impact washer | 12 Rocker mechanism |

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diaphragm away from the coil housing.

Collect the moulded nylon armature guide plate.

Note

The diaphragm and its spindle are serviced as one unit and no attempt should be made to separate them.

Body and valves (see Fig. K17)

17. Unscrew and remove the two Phillips screws securing the valve clamp plate, remove the valve caps, valves, sealing washers and filter.

18. Unscrew the four 4BA cheesehead screws securing the delivery flow smoothing device cover. Remove the cover and withdraw the rubber 'O' ring, plastic diaphragm and sealing washer.

19. Remove the single 2BA hexagon headed setscrew securing the inlet air bottle cover. Remove the cover and gasket.

20. Unscrew and remove the inlet and outlet unions.

S.U. fuel pumps assembly - To clean

If gum formation has occurred in the pump assembly, the components in contact with the fuel will have become coated with a substance similar to varnish. This has a strong stale smell and may attack the neoprene diaphragm. Brass and steel parts so affected can be cleaned by boiling them in a 20% solution of caustic soda, then dipping them in a strong nitric acid solution and finally washing them off in boiling water.

Light alloy parts should be well soaked in methylated spirits and then cleaned, do not use caustic soda to clean these parts.

S.U. fuel pumps assembly - To inspect

1. Clean the pumps assembly and inspect for cracks, damaged joint faces and threads.

2. Examine the plastic valves of the inlet and outlet valve assemblies for kinks or damage to the valve plates. The assemblies can be checked by blowing and sucking with the mouth.

3. Check that the narrow tongue on the valve cage (bent over to retain the plastic valve and to prevent it being forced out of position) has not been

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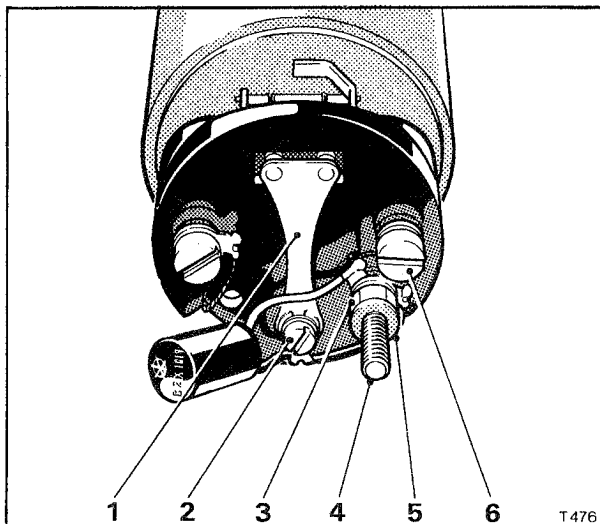


Fig. K15 Fuel pump - end cover removed

- 1 Contact blade
- 2 Cheesehead screw
- 3 Terminal nut
- 4 Terminal stud
- 5 Rubber washer
- 6 2BA screw

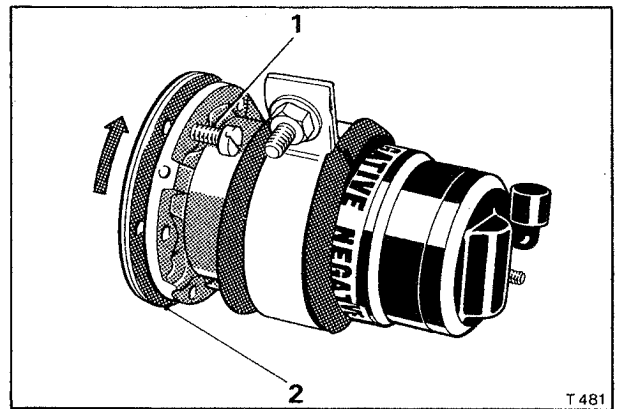


Fig. K16 Fuel pump - diaphragm removal

- 1 Screw
- 2 Diaphragm removal (anti-clockwise)

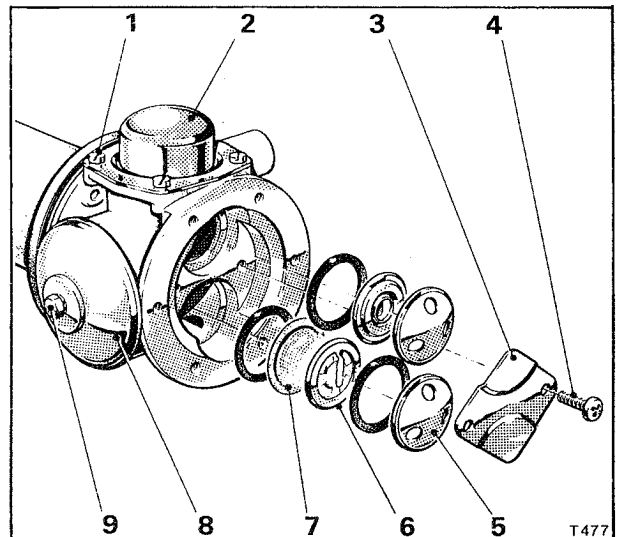


Fig. K17 Fuel pump - body and valves

- 1 4BA screw
- 2 Flow smoothing device cover
- 3 Valve clamp plate
- 4 Phillips screw
- 5 Valve cap
- 6 Valve
- 7 Filter
- 8 Air bottle cover
- 9 2BA setscrew

distorted but allows the plastic valve to lift approximately 1,59 mm. ($\frac{1}{16}$ in.) as shown in Figure K18.

4. If the delivery flow smoothing device has been dismantled, examine the plastic diaphragm, for damage. If in doubt, renew the diaphragm.
5. Examine the inlet air bottle cover for damage.
6. Inspect the valve recesses in the body for damage and corrosion; if it is either impossible to remove the corrosion or if the recess is pitted, the pump body must be discarded.
7. Clean the filter (located behind the inlet valve) and examine for fractures; renew if necessary.
8. Examine the cable insulation on the four electrical leads, also the connection tags for security (two condenser leads and two coil leads).
9. Inspect the contact breaker points for signs of burning and pitting; if this condition is evident, the rocker assembly and spring blade must be discarded and new parts fitted.
10. Closely examine the pedestal for cracks or other damage, particular attention should be given to the narrow ridge on the edge of the rectangular hole where the contact blade rests.
11. Examine the non-return vent valve in the end cover for damage, ensure that the small ball valve is free to move.
12. Inspect the neoprene pumping diaphragm for signs of deterioration.
13. Always fit new fibre and cork washers or gaskets and rubber 'O' rings.

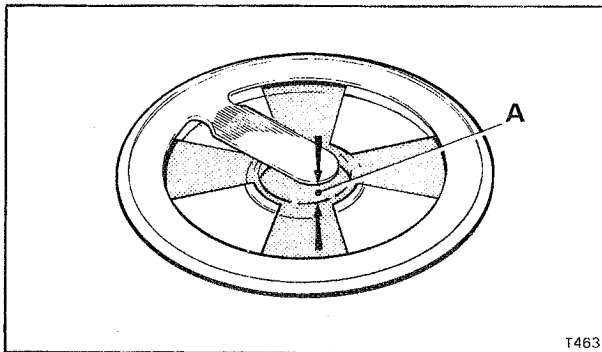


Fig. K18 Valve lift
A 1,59 mm. (0.062 in.)

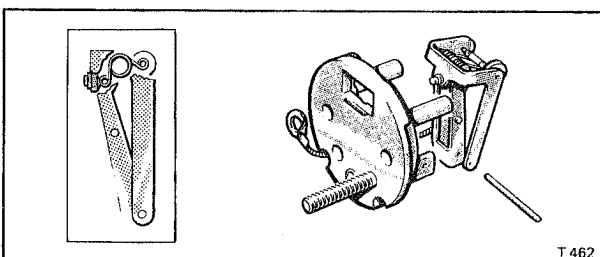


Fig. K19 Fitting the rocker assembly to the pedestal

S.U. fuel pumps assembly - To assemble Pedestal and rocker (see Figs. K19 and K20)

1. Invert the pedestal and fit the rocker assembly by pushing the specially hardened steel pin (see Fig. K19) through the small holes in the rocker and pedestal struts.

Position the centre toggle so that the inner rocker spindle is in tension against the rear of the contact points. Also ensure that the centre toggle spring is above the upper spindle (see Fig. K19, inset). The position of this centre toggle spring is important to obtain the correct 'throw-over' action. It is essential that the rockers are perfectly free to swing on the pivot pin and that the arms are not binding on the legs of the pedestal. If necessary the rockers can be aligned using a pair of thin nose pliers.

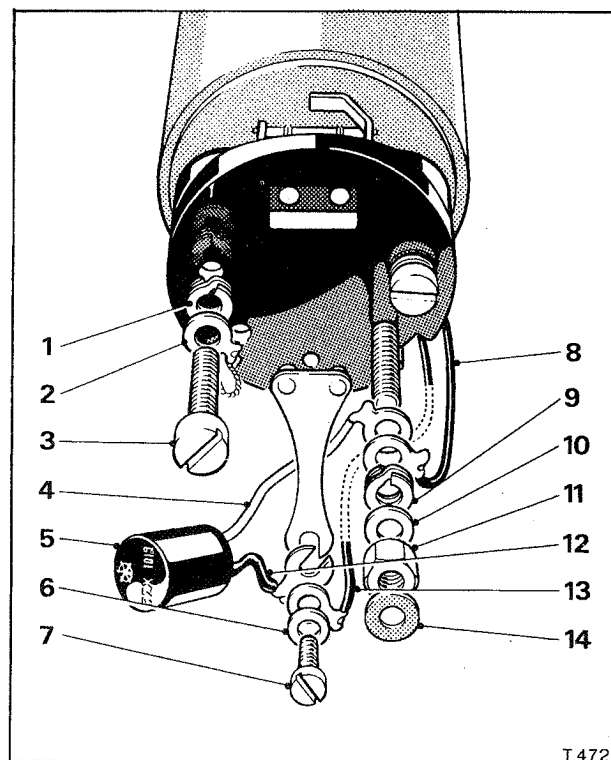


Fig. K20 Fitting the pedestal assembly to the coil housing

- 1 Spring washer
- 2 Earth tag
- 3 Setscrew
- 4 Condenser cable (red)
- 5 Condenser
- 6 Washer
- 7 Cheesehead screw
- 8 Coil cable (long black)
- 9 Spring washer
- 10 Lead washer
- 11 Terminal nut
- 12 Condenser cable (black)
- 13 Coil cable (short black)
- 14 Rubber washer

2. Assemble the square headed 2BA terminal stud to the pedestal (see Fig. K20), the inward face of the pedestal is recessed to take the square head of the terminal stud. Fit the tag of the red lead from the condenser and the tag of the short black coil lead to the terminal stud as it is fitted through the pedestal.
3. Fit the spring washer, the lead washer and then the coned nut with its coned face to the lead washer. Tighten the 2BA terminal nut and finally add the rubber end cover sealing washer.
4. Assemble the pedestal to the coil housing by fitting the 2BA pedestal screws ensuring that the spring washer on the left-hand screw is between the pedestal and the earthing tag.
5. Tighten the pedestal screws; take care that the earthing tag does not turn as this may either strain or break the earthing flex. Do not overtighten these pedestal screws otherwise the pedestal assembly may crack.

Do not fit the contact blade at this stage

Diaphragm assembly (see Fig. K21)

6. Place the armature spring into the coil housing with its larger diameter towards the coil.
7. Before fitting the diaphragm ensure that the impact washer is fitted to the armature (this is the small neoprene washer that fits into the armature recess).
8. Fit the diaphragm by inserting the spindle into the hole in the coil and screwing it into the threaded trunion in the centre of the rocker assembly.
9. Screw the diaphragm inwards (clockwise direction) until the rocker will not 'throw-over' when the centre of the diaphragm is pressed in. Exercise care during this operation to ensure that the 'no throw-over' condition is not confused with 'jamming' the armature on the internal steps of the coil housing.
10. Turn back the edge of the diaphragm and insert one of the nylon armature guide plate end lobes into the recess beneath the diaphragm as shown in Figure K22. Ensure that the flat face of the guide plate is adjacent to the diaphragm.
11. Carefully ease the guide plate into position beneath the diaphragm.
12. Press each lobe of the guide plate into the recess. In order to avoid distorting the guide plate it is important that the two end lobes are not pressed into position until all other guide plate operations have been carried out.
13. Check and if necessary adjust the stop finger and rocker finger settings (see Fig. K23). Temporarily fit the contact blade to the pedestal housing and secure with the small screw.
14. Ensure that the lift of the contact blade tip above the top of the pedestal is 0,9 mm. \pm 0,13 mm. (0.035 in. \pm 0.005 in.) when measured at A in Figure K23 with a feeler gauge. Bend the stop finger beneath the pedestal to obtain this setting.
15. Check the gap between the rocker finger and the

coil housing with a feeler gauge, bend the rocker finger if necessary to obtain a gap setting of 1,8 mm. \pm 0,13 mm. (0.070 in. \pm 0.005 in.).

16. Carefully remove the small screw and withdraw the contact blade.
17. Hold the coil housing assembly horizontally in the left hand, push the diaphragm spindle inwards with the thumb of the right hand, push firmly but steadily.
18. Unscrew the diaphragm in an anti-clockwise direction, pressing and releasing with the thumb until the rocker just 'throws-over' (see Fig. K24). Continue to unscrew the diaphragm until the holes in the diaphragm align with the holes in the pump body. Then, unscrew a further four holes (i.e. two-thirds of a complete turn). The diaphragm is now correctly set.

Pump body components

19. Ensure that the pump body is clean.

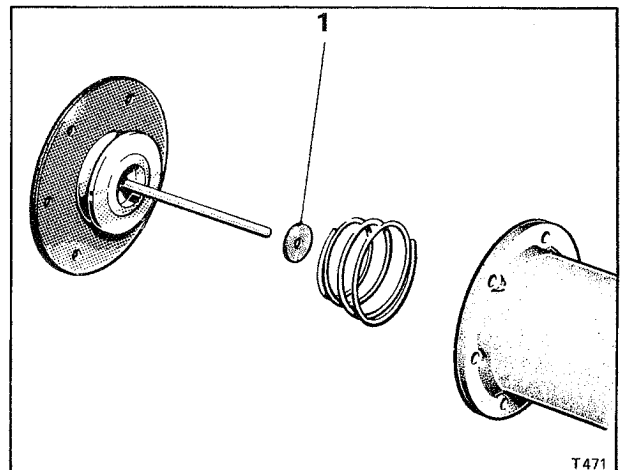


Fig. K21 Fitting the diaphragm to the coil housing
1 Impact washer

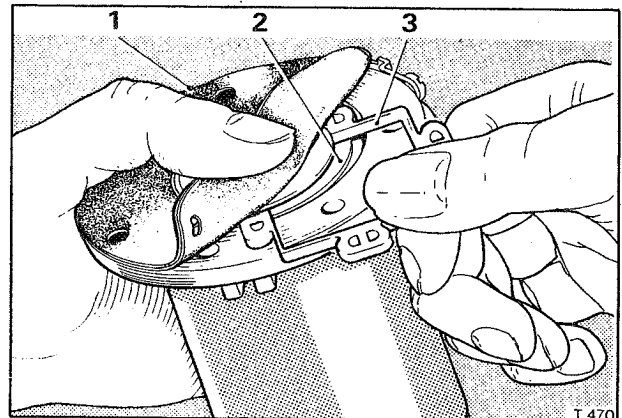


Fig. K22 Fitting the nylon armature guide plate
1 Diaphragm
2 Solenoid recess
3 Nylon guide plate

20. Fit the inlet and outlet unions into the pump body with new sealing washers.

21. Assemble the inlet valve (see Fig. K25) into the inlet recess of the pump body (the inlet recess is deeper than the outlet recess) in the following order, rubber 'O' ring, filter (domed side in), rubber 'O' ring, valve assembly (tongue side out) and finally the valve cap (domed side out).

22. Assemble the outlet valve (see Fig. K25) into the outlet recess of the pump body in the following order, rubber 'O' ring, valve assembly (tongue side in) and valve cap (domed side out).

23. Take care to ensure that both valve assemblies are correctly seated in their respective recesses

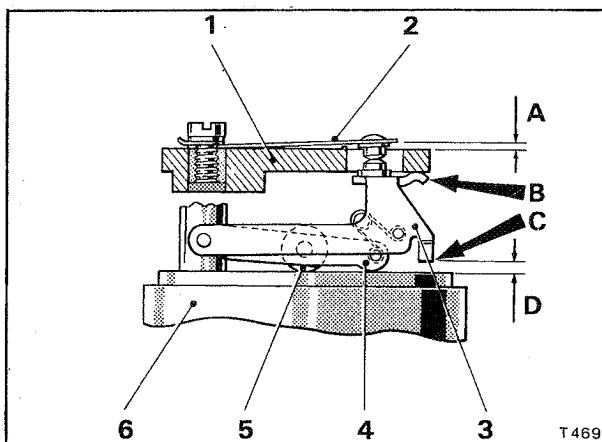


Fig. K23 Rocker finger and stop finger settings

- 1 Pedestal
- 2 Contact blade
- 3 Outer rocker
- 4 Inner rocker
- 5 Trunnion
- 6 Coil housing
- A Stop finger setting
- B Stop finger
- C Rocker finger
- D Rocker finger setting

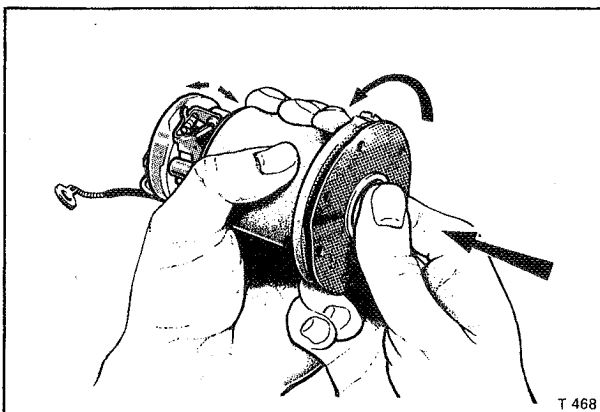


Fig. K24 Setting the diaphragm

and fit the clamp plate which should be secured in position with two Phillips headed screws.

24. Fit the inlet air bottle cover and joint washer (see Fig. K14), secure with the hexagon headed 2BA screw.

25. Place the transparent sealing washer in the bottom of the delivery flow smoothing device recess in the pump body (see Fig. K26). Assemble the remainder of the device by fitting the plastic diaphragm (domed side in), the rubber 'O' ring and finally the cover which should be retained in position by four 4BA screws.

Body attachment

26. Fit the gasket to the pump body ensuring that the securing holes are aligned.

27. Offer the coil housing up to the body ensuring a correct seating between the parts. Ensure that the delivery flow smoothing device is at the top of the pump body. Also ensure that the solenoid housing screw hole for the earth braid is on the upper left-hand side (i.e. ten to the hour).

28. Align the six screw holes and insert the six 2BA screws. Tighten the screws as they appear diametrically opposite each other.

29. Fit the earth braid securing it with a small screw and spring washer. The braid should be fitted so that with the pump inlet and outlet unions pointing away, the largest braid connection is at the right-hand side and not connected.

Contact blade

30. Fit the contact blade and long coil lead to the pedestal using a 5BA screw and washer.

31. Before tightening the 5BA screw slide the black condenser lead tag between the contact blade and coil lead.

32. Adjust the contact blade so that the contact

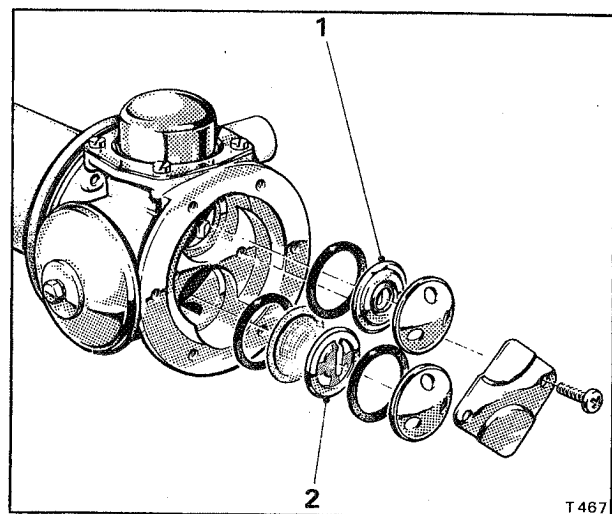


Fig. K25 Valve assembly

- 1 Outlet
- 2 Inlet

points are a little above the points on the rocker when the points are closed (see Fig. K27). Also ensure that when the contact points either make or break, one pair of points wipes over the centre line of the other in a symmetrical manner. As the contact blade is provided with a slot for the retaining screw, some degree of adjustment is possible.

33. Tighten the contact blade retaining screw.

Contact gap setting

34. Check that when the outer rocker is pressed onto the coil housing, the contact blade rests on the narrow ridge that projects slightly above the main face of the pedestal (see Fig. K28). If the contact blade does not rest on the ridge, slacken the attachment screw, swing the blade clear of the pedestal and bend it downwards sufficiently to ensure that it will rest lightly against the ridge when secured in position again.

Note

Ensure that the contact blade is not over tensioned otherwise the travel of the rocker mechanism will be restricted.

35. Carry out Operations 13 to 15 inclusive to

ensure that the stop finger and rocker finger settings are correct.

36. Ensure that the contact blade is firmly secured in position by its retaining screw.

End cover

37. Carefully bend any spare electric wiring into position so that it cannot foul the rocker mechanism.

38. Ensure that the end cover sealing washer is fitted to the terminal stud, fit the bakelite end cover.

39. Fit the shakeproof washer to the terminal stud and secure the end cover with the terminal nut.

40. Flow test the pump (see Twin S.U. electric fuel pumps - To flow test).

41. After a successful flow test, fit the rubber

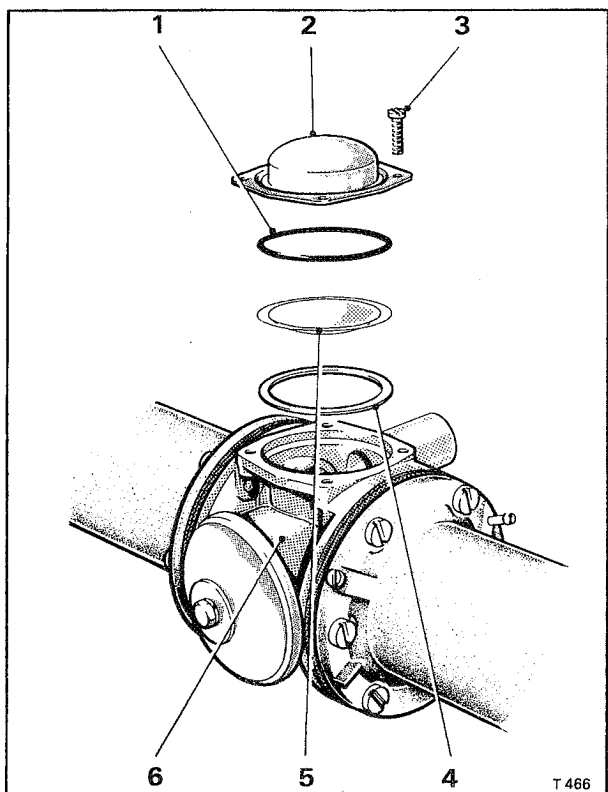


Fig. K26 Delivery flow smoothing device

- 1 'O' ring
- 2 Cover
- 3 Setscrew
- 4 Transparent sealing washer
- 5 Plastic diaphragm
- 6 Pump body

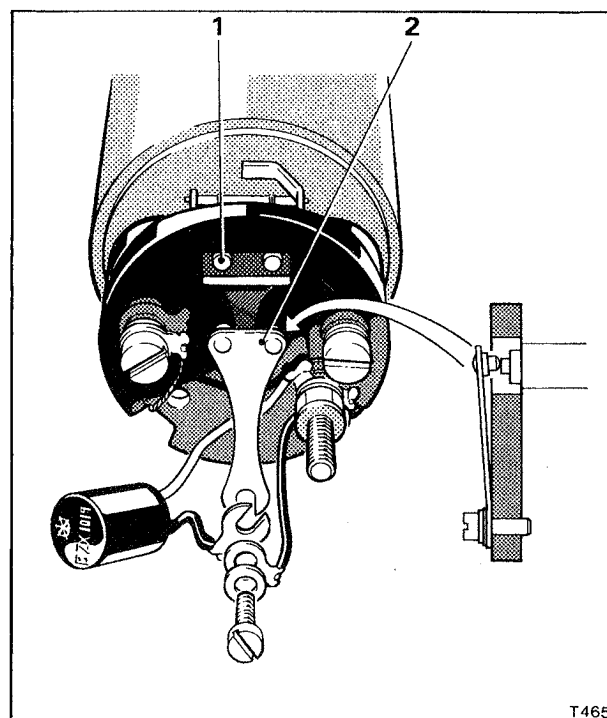


Fig. K27 Setting the position of the contact points

- 1 Rocker points
- 2 Contact blade

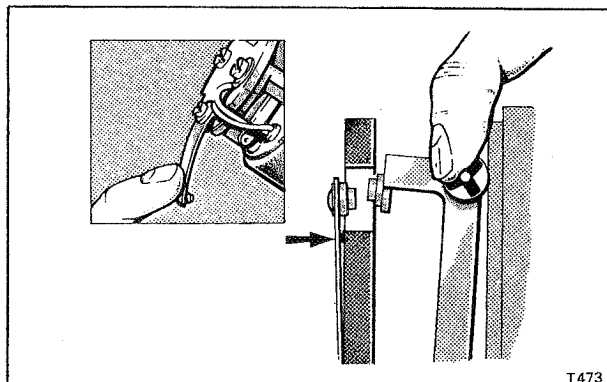


Fig. K28 Contact blade resting on pedestal ridge

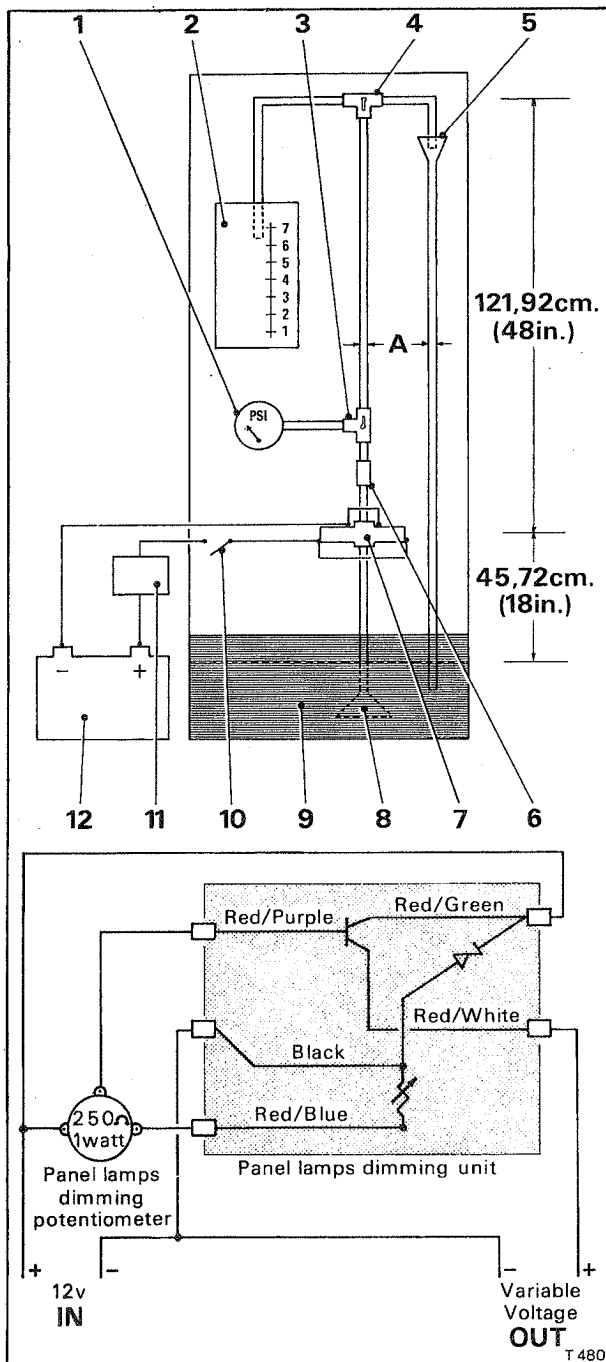


Fig. K29 Fuel pumps assembly test rig

- A 7,94 mm. ($\frac{5}{16}$ in.) dia. bore piping
- 1 Pressure gauge
 - 2 Measuring container
 - 3 Three-way tap
 - 4 Three-way tap
 - 5 Siphon break
 - 6 Polythene 'sight glass' pipe
 - 7 Fuel pumps assembly
 - 8 Filter
 - 9 Reservoir
 - 10 On-off switch
 - 11 Voltage reducer (12v to 9.5v)
 - 12 12 volt battery

sealing band over the end cover to coil housing joint; secure in position with adhesive tape.

42. Apply an adhesive such as Bostik 772 to the inside of the metal mounting band and around the solenoid housing to retain the foam rubber mounting strip.

43. Allow the adhesive to become tacky and fit the foam rubber mounting strip inside the metal mounting band.

44. Carefully slide the metal mounting band with the foam rubber inlay into position along the pump solenoid body. Press the foam rubber strip onto the adhesive around the solenoid body.

45. Repeat the operations to the other pump assembly.

46. Fit the fuel pumps assembly to the vehicle (see S.U. fuel pumps assembly - To fit).

Twin S.U. electric fuel pumps - To flow test

When both fuel pumps are operating they should deliver a minimum of 2,27 litres (4.0 Imp. pt., 4.8 U.S. pt.) of paraffin in one minute at a delivery head of 1,22 m. (4ft.) and a suction lift of 45,72 cm. (18 in.).

1. Mount the fuel pumps assembly on a test rig similar to that shown in Figure K29.

2. Ensure that the battery used in the test is in a fully charged condition.

3. Carry out the necessary workshop safety precautions including the provision of a suitable fire extinguisher.

4. Connect the flexible inlet and outlet pipes of the test apparatus to the fuel pump unions.

5. Check that the two taps on the test apparatus are positioned so that paraffin will be pumped to the top of the piping and returned to the reservoir via the 'siphon break' line.

6. Switch on the test apparatus and allow the pump to run at maximum voltage for ten minutes. After the first minute of operation observe that there are no bubbles in the paraffin as it passes the polythene pipe (sight glass).

7. Turn the three-way tap to divert the flow of paraffin towards the pressure gauge. Ensure that a pressure of approximately 0,27 kgf/sq.cm. (3.8 lbf/sq.in.) is registered before the pump stalls. Under these conditions the pump should not operate (tick) for at least 15 seconds.

Note

(a) a shorter period than 15 seconds may indicate faulty valves.

(b) if the pump 'buzzes' the diaphragm may be too flexible.

8. Open the three-way tap and allow the pump operation to return to normal.

9. Position the three-way tap situated at the top of the test apparatus to divert the flow of paraffin from the 'siphon break' to the measuring container. Ensure that the fuel pump assembly delivers a minimum of 2,27 litres (4 Imp. pt., 4.8 U.S. pt.) in one minute.

10. Again position the three-way tap so that the

paraffin is directed towards the 'siphon break'. Switch off the test apparatus.

11. Switch the voltage reducing unit (see Fig. K29) to 9.5 volts. Switch on the apparatus for the minimum length of time necessary to ensure that the fuel pumps assembly still operates (although the output may be low).

12. Switch off the test apparatus, disconnect the battery and remove the fuel pumps assembly.

Single Pierburg rotary vane electric fuel pump (see Fig. K30)

The Pierburg pump is an electrically operated rotary vane pump. It is situated on the right-hand side of the car in a vertical position and secured to the rear suspension crossmember. The pump outlet is indicated by the fuel flow direction arrow cast on the top of the outlet boss.

The electrical terminals have metric threads and to assist identification have positive and negative symbols embossed on the bottom face of their plastic surrounds.

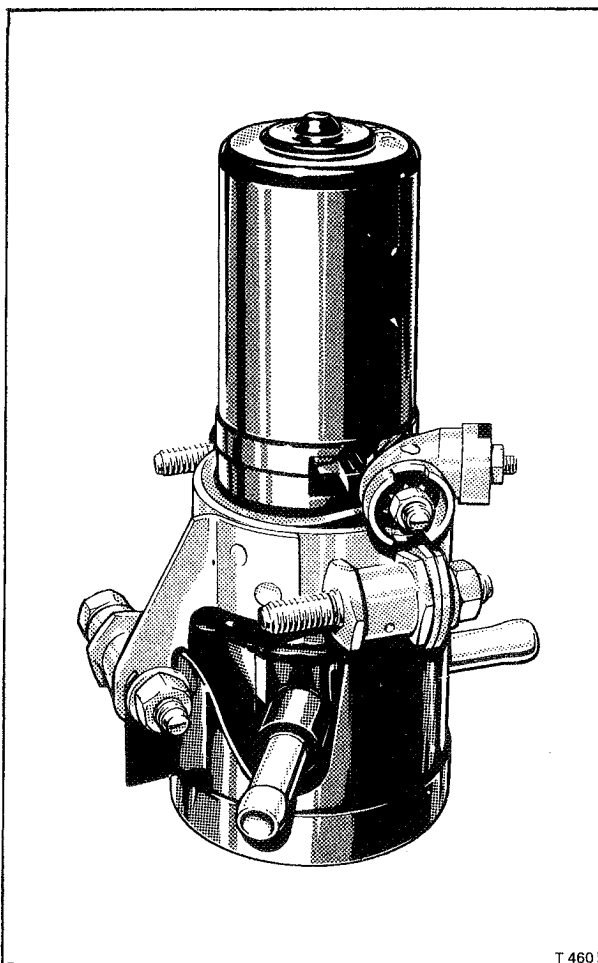


Fig. K30 Single Pierburg rotary vane electric fuel pump

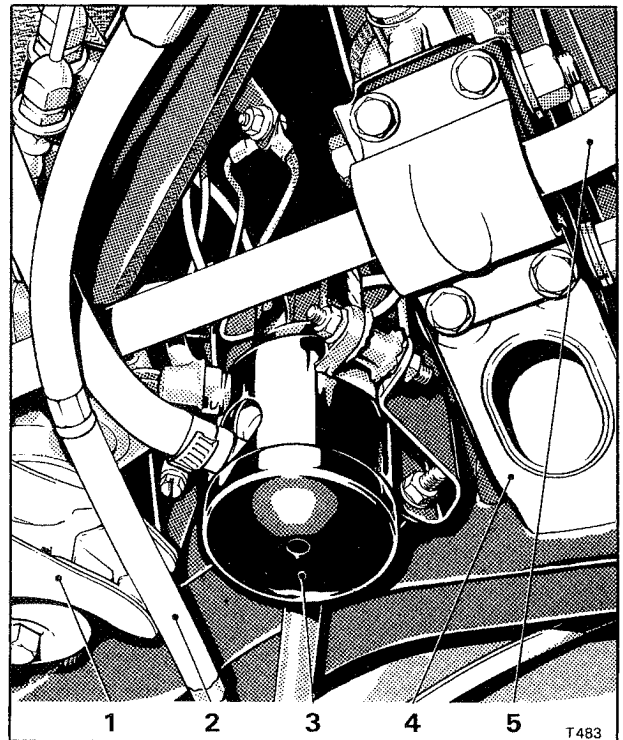


Fig. K31 Installation of Pierburg pump

- 1 Torque arm
- 2 Parking brake cable
- 3 Pierburg pump
- 4 Rear suspension crossmember
- 5 Stabiliser bar

Operation

The pump is driven by a permanent magnet coupling. Situated at the end of the pump shaft are two rotational symmetric permanent magnets; the magnetic field of these is used to transmit the drive. The advantage of this coupling is that the drive is broken when the motor is overloaded, thus, both motor and pump are protected from damage.

The rotary vane pump consists mainly of the rotor which has five vanes, the pressure relief valve and the housing. The vanes are produced from wear resistant artificial carbon, they are positioned in the rotor and will slide radially, being guided by centrifugal force onto the interior wall of the eccentrically positioned stator. The principle of supplying fuel is that by rotation of the rotor the suction volume in the housing is increasing periodically while the pressure volume is decreasing. Therefore, the fuel to be supplied flows via the suction chamber into the pumping chamber between the vanes, it is then accelerated to the pump outlet chamber by the cells which are formed between the vanes.

A pressure relief valve is located in the fuel outlet; it is pre-set to a minimum pressure of approximately 0,5 kgf/sq.cm. (7.2 lbf/sq.in.) by the installation of the appropriate rated spring. When the pre-determined pressure is reached, the valve

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opens against the resistance of the spring and allows fuel to return to the inlet (suction) side of the pump.

A coarse filter is included in the inlet to the suction chamber and may require cleaning under exceptional circumstances.

Pierburg fuel pump assembly - To remove (see Fig. K31)

1. Drive the car onto a ramp.
2. Ensure that the parking brake is firmly applied.
3. Remove the gear range selector thermal cut-out from the fuseboard.
4. Disconnect the battery.
5. Carry out the necessary workshop safety precautions.
6. Raise the ramp to a convenient working height.
7. Unscrew and remove the nut securing the white/pink electrical cable to the terminal stud; withdraw the cable.
8. Unscrew and remove the nut securing the earth braid cable to the terminal stud; withdraw the cable.
9. Unscrew the worm drive clips securing both the fuel inlet and outlet hoses to the pump assembly. Withdraw both hoses and suitably blank the open connections.
10. Unscrew and remove the three $\frac{7}{16}$ in. A/F nuts and washers securing the pump and stone guard to the flexible rubber mounts.
11. Withdraw the pump assembly.

Pierburg fuel pump assembly - To fit

Fit the fuel pump assembly by reversing the procedure given for removal.

Pierburg fuel pump assembly - To dismantle (see Fig. K32)

When a fuel pump is found to be faulty, a new or reconditioned pump **should** be fitted.

If a fuel pump requires dismantling for cleaning purposes, proceed as follows.

1. Remove the pump from the car.
2. Unscrew and remove the three setscrews from the bottom bearing plate. Hold the plate in position.
3. Turn the pump upside down and remove the plate.
4. Withdraw the rotor, vanes, stator and upper bearing plate.
5. Withdraw the bottom of the pump assembly from the motor drive assembly, collect the 'O' ring.
6. Remove the drive-shaft and ball bearing. Care should be taken not to lose the ball bearing.
7. If necessary, the coarse filter may be carefully removed from the top of the pump housing.

Pierburg fuel pump assembly - To clean

The fuel pump requires no routine maintenance. However, if the pump is dismantled for cleaning, the parts should be washed in clean paraffin only.

The motor assembly must not be washed although the body casing can be wiped clean.

Pierburg fuel pump assembly - To assemble

Assemble the fuel pump by reversing the procedure given for dismantling, noting the following.

1. Take care when replacing the rotor as it has a stepped internal segment. When correctly fitted the stepped internal segment should be uppermost allowing the drive-shaft to be flush with the bottom of the rotor.

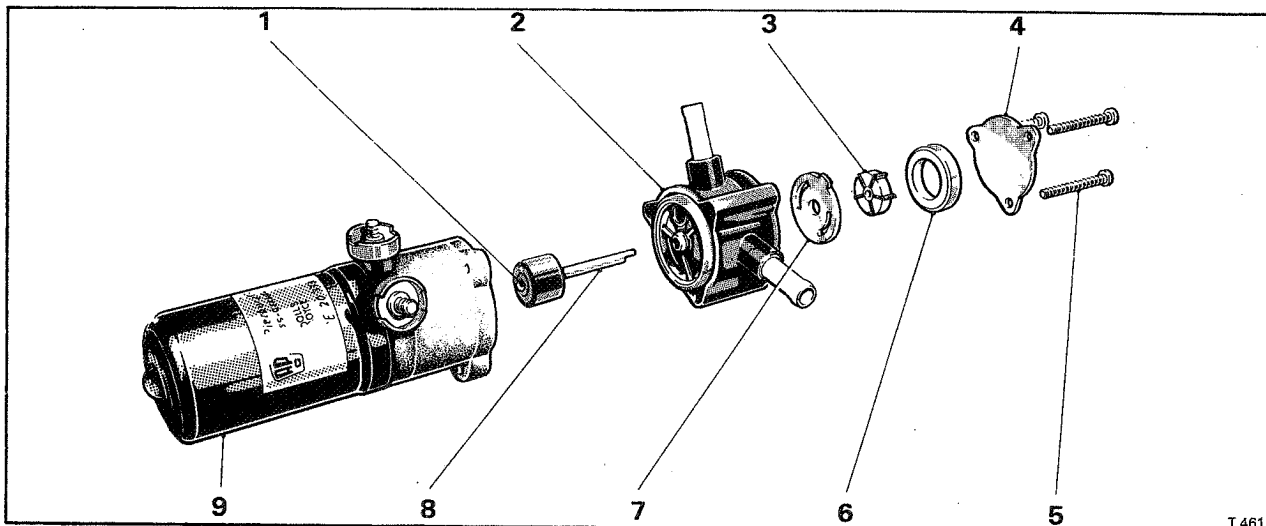


Fig. K32 Pierburg pump - exploded

- | | |
|-----------------------|-----------------------|
| 1 Ball bearing | 6 Stator |
| 2 Pump body | 7 Upper bearing plate |
| 3 Rotor and vanes | 8 Drive-shaft |
| 4 Lower bearing plate | 9 Motor body |
| 5 Setscrews | |

Pierburg fuel pump assembly - To flow test on the car (see Fig. K33)

The fuel pump should deliver approximately 2,27 litres (4.0 Imp pt., 4.8 U.S. pt.) of fuel in one minute at zero suction head pressure and zero suction lift.

1. Position the car on a ramp.
2. Ensure that the parking brake is firmly applied.
3. Remove the gear range selector thermal cut-out from the fuseboard.
4. Disconnect the outlet pipe from the pump.
5. Connect one end of a suitable flexible hose to the fuel pump outlet and the other end to the test equipment.
6. Disconnect the brown/yellow cable from the

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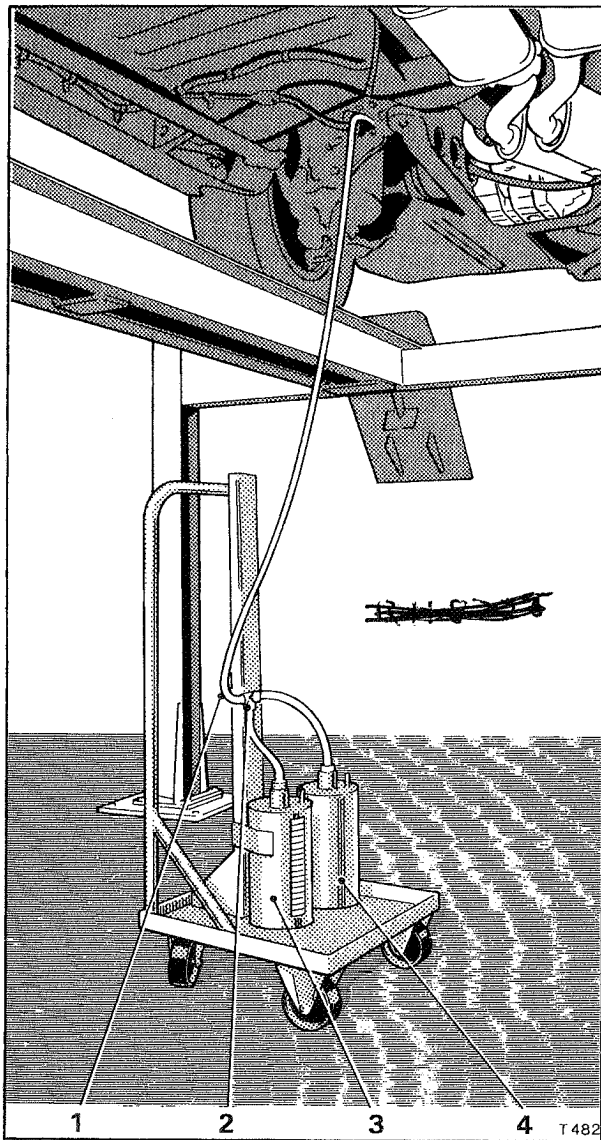


Fig. K33 Pierburg pump - on car testing

- 1 Pump outlet pipe
- 2 Flow control valve
- 3 Measuring container
- 4 Auxiliary container

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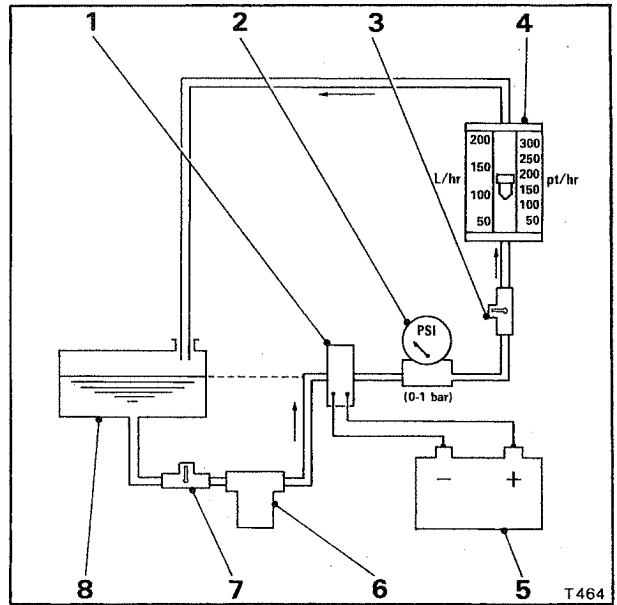


Fig. K34 Pierburg pump flow test rig - off car testing

- 1 Fuel pump
- 2 Pressure gauge
- 3 Flow control valve
- 4 Flow meter - rotameter type
- 5 12v battery (fully charged)
- 6 Filter
- 7 On/off tap
- 8 Paraffin reservoir 5 litres (9 Imp. pt., 10.5 U.S. pt.) min. capacity

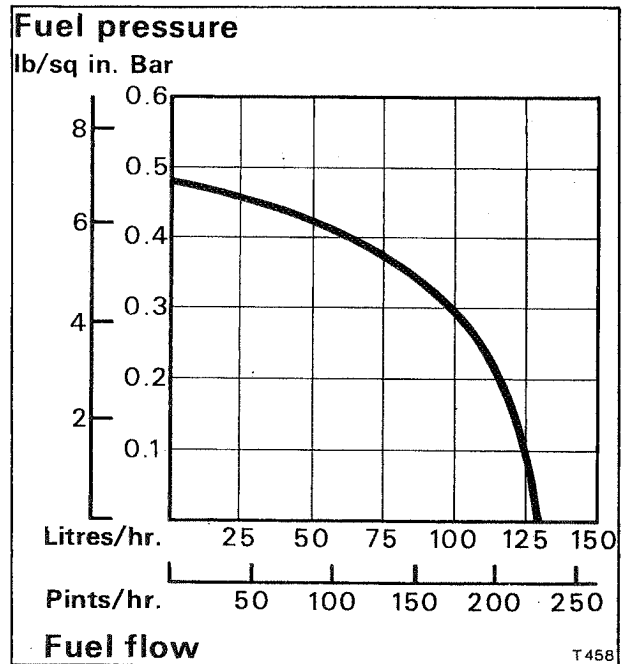


Fig. K35 Graph - min pump performance (zero suction head)

outer pressure switch on the oil filter elbow.

7. Switch on the ignition, allow the pump to operate normally for fifteen seconds, then measure the fuel output for one minute. An output of 1,7 litres (3.0 Imp. pt., 3.6 U.S. pt.) is acceptable.

Pierburg fuel pump assembly - To flow test on a rig

The fuel pump should be tested as shown in Figure K34. The pump should be sited on the same level as the paraffin in the reservoir and deliver 2,27 litres (4.0 Imp. pt., 4.8 U.S. pt.) of paraffin in one minute, at zero suction head pressure and zero suction lift. If the fuel pressure is increased by the control valve, the flow should be checked against the flow details given in Figure K35.