

(11) Refit the suction chamber assembly if it has been removed and, using the lifting pin, check that the piston falls freely onto the bridge.

(12) Check the piston damper oil level: Unscrew the cap and withdraw the damper. Top up with engine oil (preferably SAE 20) until the level is 3 mm above the top of the hollow piston rod (8). Refit the damper and screw the cap firmly into the suction chamber.

(13) Start the engine and run it at a fast idle speed until it attains normal running temperature, then run it for a further five minutes.

(14) Increase the engine speed to 2500 r/min for 30 seconds.

2. Setting can now commence. If the correct setting cannot be obtained within three minutes, increase the engine speed to 2500 r/min for 30 seconds and then re-commence tuning. Repeat this clearing operation at three minute intervals until tuning is completed. Set as follows:

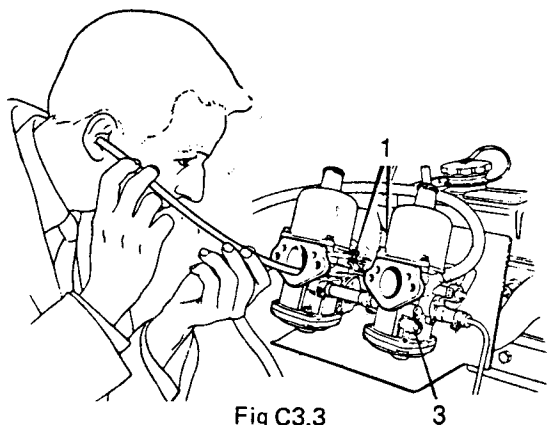


Fig C3.3

(1) Refer to Fig C3.3. Slacken both clamping bolts on the throttle spindle interconnections.

(2) Slacken both clamping bolts (1) on the cold start interconnections.

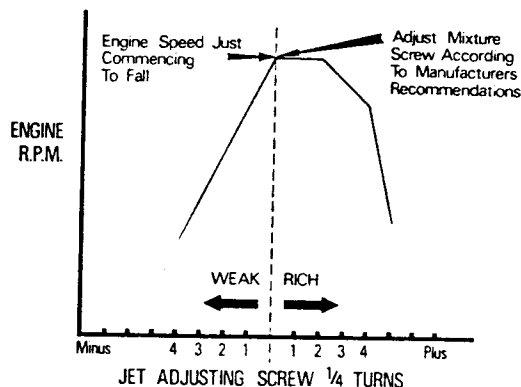


Fig C3.4

(3) Refer to Fig C3.4. Use a listening tube to compare the intensity of the intake hiss on all carburetters and turn the throttle adjusting screws (1) until the hiss is the same.

(4) Turn the jet adjusting screw (3) on each carburettor clockwise to enrich or anti-clockwise to weaken, by the same amount until the fastest speed is indicated. Turn each screw counterclockwise until the engine speed just starts to fall.

(5) Turn each screw very slowly clockwise by the minimum amount until the maximum speed is regained. From this setting adjust the mixture screws according to the graph.

(6) Check the idle speed and re-adjust it as necessary with the throttle adjusting screws (1) turning each by the same amount.

(7) Set the throttle interconnection clamping levers so that a clearance exists between the link pin and the lower edge of the fork. Tighten the clamp bolts, ensuring that there is approximately 0.8 mm end-float on the interconnection rod.

(8) Run the engine at 1500 r/min and check the throttle linkage for correct connection by re-checking the carburettor balance.

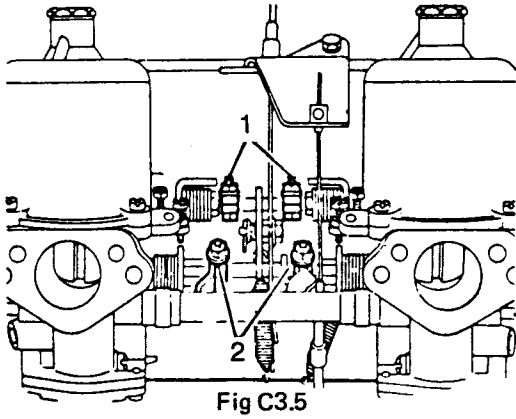


Fig C3.5

- (9) Refer to Fig C3.5. With the fast idle cams (2) of each carburetter against their respective stops, set the cold start interconnections so that all cams begin to move simultaneously.
- (10) With the fast idle cams against their stops check that a 1,5 mm free movement of the mixture control (choke) cables exists before the cable moves the cams.
- (11) Pull out the mixture control (choke) until the arrow marked on the cam is positioned under the fast idle adjusting screw of each carburetter.

- (12) Using the listening tube to ensure equal adjustment, turn the fast idle adjusting screws to give the correct fast idle speed.

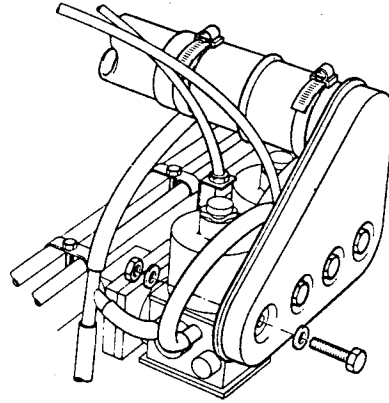


Fig C3.6

- (13) Refer to Fig C3.6. Refit the air intake box and hose.

SUB-SECTION CONTENTS LIST

SUB-SECTION C4

REMOVAL AND REPLACEMENT PROCEDURES

CHAPTER	DESCRIPTION	PAGE
1	CARBURETTOR - REMOVAL AND REPLACEMENT	C4.3
2	FUEL PUMP - REMOVAL AND REPLACEMENT	C4.4
3	FUEL FILTER - REMOVAL AND REPLACEMENT	C4.5
4	FUEL TANK - REMOVAL AND REPLACEMENT	C4.6

SUB-SECTION C4

CHAPTER 1

CARBURETTERS - REMOVAL AND REPLACEMENT

REMOVAL

1. Both carburetters are removed initially. Separation is carried out after removal. To remove the carburetters:

(1) Disconnect the battery.

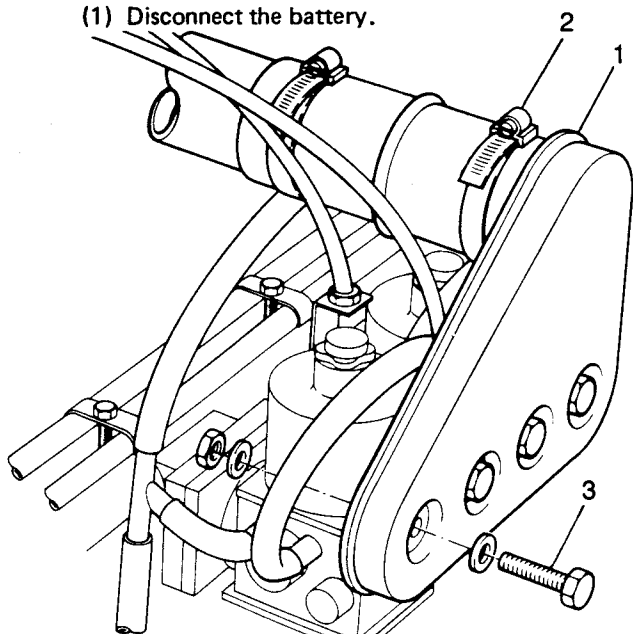


Fig C4.1

- (2) Refer to Fig C4.1. Remove the air intake box (1) by disconnecting the air inlet hose (2) and removing the four bolts (3) holding the box to the carburetters. (Note that the bolts have loose nuts and washers behind the box).

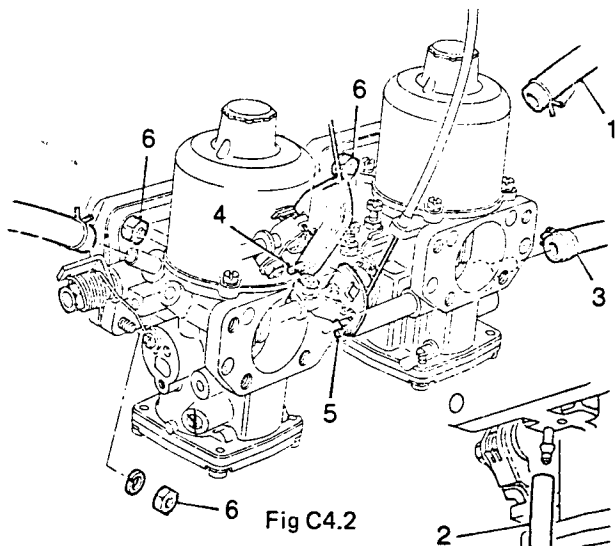


Fig C4.2

- (3) Refer to Fig C4.2. Disconnect the engine purge hoses (1) from the carburetters.

- (4) Disconnect the ignition vacuum advance pipe (2) from the rear carburetter.
- (5) Disconnect the fuel feed pipe (3) to the rear carburetter.
- (6) Release the throttle and choke cable fixings (4) and (5) and disconnect the cables.
- (7) Remove the eight nuts and spring washers (6) to release the carburetters.
- (8) Remove the carburetters, keeping them together so as not to disturb the inter-connecting linkages.

REPLACEMENT

2. Replace the carburetters as follows: (Fig C4.2 still applies).

- (1) Using new gaskets fit the carburetters over the studs in the inlet manifold and secure with eight nuts and spring washers (6). Tighten the nuts to 8 to 10 N.m.
- (2) Fit the throttle and choke cables and tighten the fixings (4) and (5).
- (3) Reconnect the fuel feed pipe (3) to the rear carburetter.
- (4) Reconnect the ignition advance pipe (2) to the rear carburetter.
- (5) Fit the engine purge hoses (1) to the carburetters.
- (6) Reconnect the battery.

NOTE

If the carburetters are to be tuned do so at this stage (see Sub-section C3). If not, continue:

- (7) Replace the air intake box over the carburetters (four bolts, nuts and washers).
- (8) Refit the air inlet hose and tighten the hose clamp.

SUB-SECTION C4

CHAPTER 2

FUEL PUMP - REMOVAL AND REPLACEMENT

REMOVAL

1. Remove the fuel pump as detailed below:

- (1) Disconnect the battery earth lead.

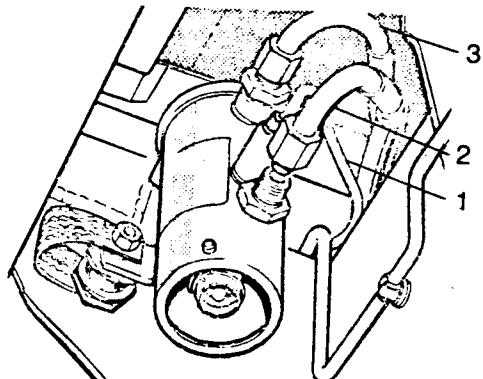


Fig C4.3

- (2) Refer to Fig C4.3. Disconnect the fuel pump electric lead (1) at the snap connector.
- (3) Disconnect the lower fuel pipe (2) (inlet) and cover the end to prevent loss of fuel.

NOTE

Do NOT plug the pipe end.

- (4) Disconnect the upper fuel pipe (3) (outlet) and cover the end to prevent fuel loss and the ingress of dirt.
- (5) Remove the two nuts (one at each side of the pump) and remove the pump.

REPLACEMENT

2. To replace the pump:

- (1) Fit the pump over the two studs with the end with the bayonet fixing downwards.
- (2) Ensure that the earth braid is in position and secure the pump with the two nuts.
- (3) Remove the cover over the upper fuel pipe and fit the pipe to the upper union. Tighten the union nut.
- (4) Remove the cover over the lower fuel pipe and fit the pipe to the lower connection on the pump. Tighten the union nut.
- (5) Reconnect the electrical lead to the snap connector.
- (6) Reconnect the battery earth lead.

SUB-SECTION C4

CHAPTER 3

FUEL FILTER - REMOVAL AND REPLACEMENT

REMOVAL

1. To remove the fuel filter:

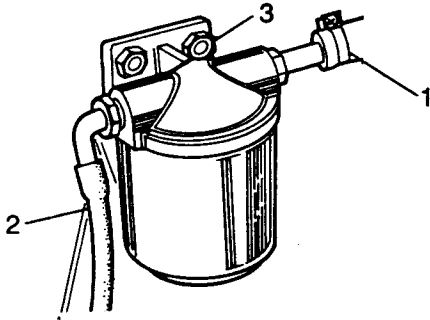


Fig C4.4

- (1) Refer to Fig C4.4. Loosen the clamps (4) over the two pipes (1) and (2) and disconnect the two pipes from the filter.
- (2) Remove the two nuts (3) securing the filter to the rear wall.
- (3) Lift the filter away from the two studs.

REPLACEMENT

2. Replace the filter as follows:
 - (1) Position the filter on the two studs.
 - (2) Secure the filter with the two nuts (3).
 - (3) Replace the inlet (1) and outlet (2) pipes and tighten the clamps (4).

SUB-SECTION C4

CHAPTER 4

FUEL TANK - REMOVAL AND REPLACEMENT

REMOVAL

1. To remove the fuel tank:
 - (1) Disconnect the battery.
 - (2) Drain the fuel into a clean container ((4) on Fig C4.5 is the drain plug).
 - (3) Release the clip securing the filler tube hose to the tank.

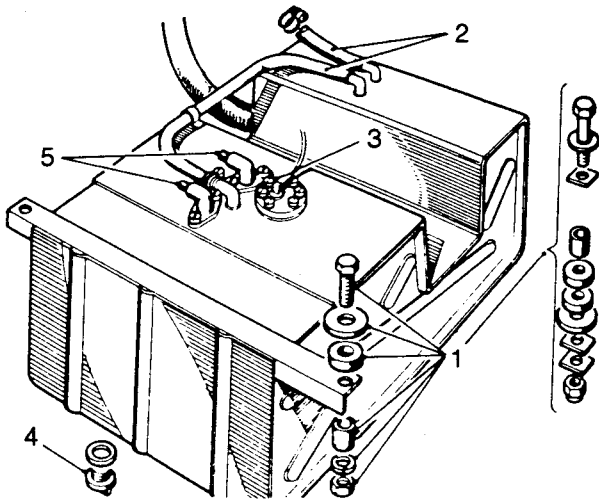


Fig C4.5

- (4) Refer to Fig C4.5. Support the tank and remove the tank securing bolts (1).
- (5) Lower the tank only sufficiently to give access to the leads and pipes on top of the tank.
- (6) Disconnect the breather and air balance pipes (2).
- (7) Disconnect the wires at the gauge unit (3).
- (8) Disconnect the fuel supply pipes (5).
- (9) Lower the tank and remove it from under the vehicle.

REPLACEMENT

2. Replace the fuel tank as follows:
 - (1) Fit the tank under the vehicle and raise it sufficiently to allow connection of the various pipes and tubes. Support the tank in this position.
 - (2) Reconnect the electrical leads to the gauge unit.
 - (3) Reconnect the breather and air balance pipes.
 - (4) Lift the tank into position, fitting the fuel supply pipe into the flexible coupling at the filler cap end.
 - (5) Fit the tank securing bolts, washers, spacers (if any) and nuts. Tighten the nuts.
 - (6) Reconnect the battery.

SUB-SECTION CONTENTS LIST

SUB-SECTION C5

OVERHAUL PROCEDURES

CHAPTER	DESCRIPTION	PAGE
1	CARBURETTER - OVERHAUL	C5.3
2	FUEL PUMP - OVERHAUL	C5.7

SUB-SECTION C5

CHAPTER 1

CARBURETTER - OVERHAUL

DISMANTLING

1. First remove the carburetters as detailed in Sub-section C4, Chapter 1.
2. Dismantle a carburetter as follows:
 - (1) Thoroughly clean the outside of the carburetter.

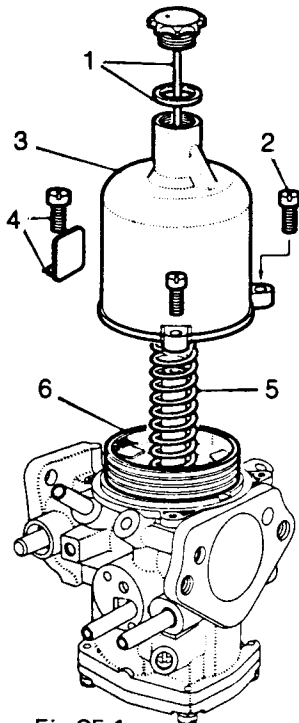


Fig C5.1

- (2) Refer to Fig C5.1. Remove the piston damper (1) and its washer.
- (3) Unscrew the suction chamber retaining screws (2) and remove the identity tag (4).
- (4) Lift the chamber assembly (3) vertically from the body without tilting it.
- (5) Remove the piston spring (5). Lift out the piston assembly (6) and empty the oil from the piston rod.

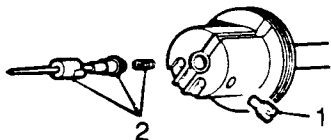


Fig C5.2

- (6) Refer to Fig C5.2. Note the position of the needle guide etch mark in relation to the piston transfer holes for correct reassembly and unscrew the needle guide locking screw (1).

- (7) Withdraw the needle, guide and spring (2).

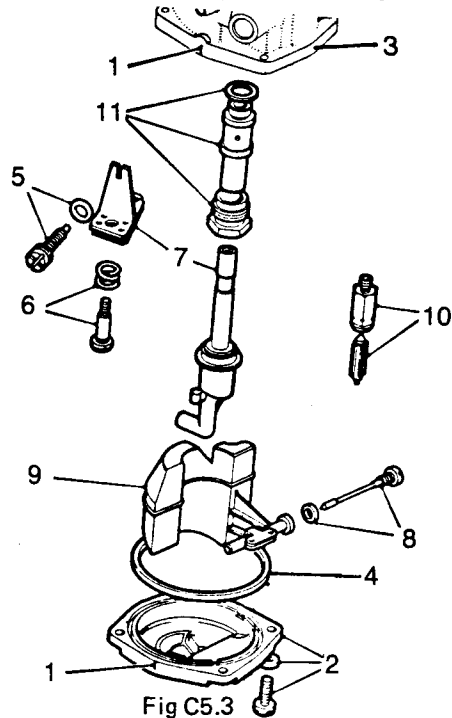


Fig C5.3

- (8) Refer to Fig C5.3. Mark the bottom cover plate and body (1) to ensure correct reassembly. Unscrew the retaining screws (2) and remove the cover (3) complete with sealing ring (4).
- (9) Remove the jet adjusting screw (5) complete with O-ring.
- (10) Remove the jet adjusting lever retaining screw and spring (6).
- (11) Withdraw the jet complete with adjusting lever and disengage the lever (7).
- (12) Remove the float pivot spindle and fibre washer (8).
- (13) Withdraw the float (9).
- (14) Remove the needle valve and unscrew the valve seat (10).
- (15) Unscrew the jet bearing locking nut and withdraw the bearing complete with fibre washer (11).

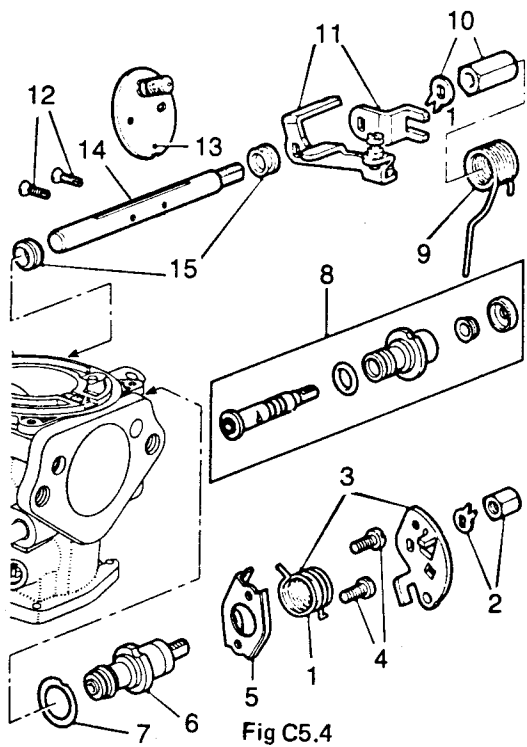


Fig C5.4

- (16) Refer to Fig C5.4. Note the location of the ends of the fast idle cam lever return spring (1).
- (17) Unlock and remove the cam lever retaining nut and locking washer (2).
- (18) With the return spring held toward the carburettor body, prise off the cam lever and remove the return spring (3).
- (19) Unscrew the starter unit retaining screws (4) and remove the cover plate (5).
- (20) Withdraw the starter unit assembly (6) and remove its gasket (7).
- (21) Withdraw the valve spindle and remove the O-rings, seals and dust cap (8).
- (22) Note the location and loading of the ends of the throttle lever return spring and remove the spring (9).
- (23) Unlock and remove the nut and tab washer (10) and retaining throttle levers.
- (24) Remove the throttle lever and throttle actuating lever (11).
- (25) Remove the throttle disc retaining screws (12).
- (26) Close the throttle and mark the position of the throttle disc (13) in relation to the carburettor flange. Do not mark the disc in the vicinity of the over-run valve. Open the throttle and carefully withdraw the disc from the throttle spindle taking care not to damage the over-run valve.
- (27) Withdraw the throttle spindle (14) and remove its seals (15) noting the way the spindle is fitted in relation to the carburettor body to ensure correct reassembly.

INSPECTING

3. Make the following checks on components:
 - (1) Examine the throttle spindle and its bearings in the carburettor body; check for excessive play, and renew parts as necessary.
 - (2) Examine the float needle and seating for damage and excessive wear, renew if necessary.
 - (3) Examine all rubber seals and O-rings for damage or deterioration; renew as necessary. The cover plate sealing ring must be renewed.
 - (4) Check condition of all fibre washers and gaskets; renew as necessary.
 - (5) Examine the carburettor body for cracks and damage and for security of the brass connections and the piston key.
 - (6) Clean the inside of the suction chamber and piston rod guide with fuel or methylated spirit (denatured alcohol) and wipe dry. Abrasives must not be used.
 - (7) Examine the suction chamber and piston for damage and signs of scoring.

NOTE

The following tuning check need only be carried out if the cause of the carburettor malfunction which necessitated the dismantling has not been located.

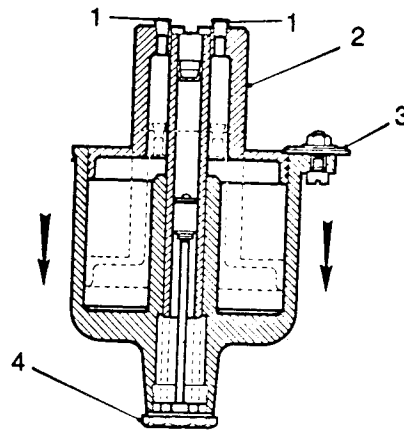


Fig C5.5

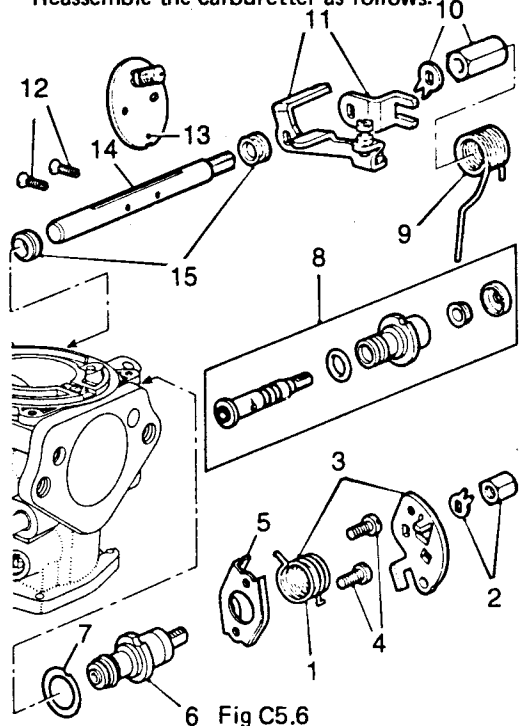
- (8) Refer to Fig C5.5. Temporarily plug the piston transfer holes (1).
- (9) Fit the piston (2) into the chamber without its spring.
- (10) Fit a nut and screw, with a large flat washer (3), under the nut, into one of the suction chambers fixing holes, positioning the washer so that it overlaps the chamber bore.
- (11) Fit the damper and washer (4).
- (12) Check that the piston is fully home in the chamber, invert the assembly to allow the chamber to fall away until the piston contacts the washer.

(13) Check the time taken for the chamber to fall the full extent of the piston travel. For carburettors of 38 mm to 47,6 mm the time taken should be 5 to 7 seconds.

(14) If the times are exceeded check the piston and chamber for presence of oil, foreign matter and damage. If after re-checking the time is still not within these limits, renew the suction chamber assembly.

REASSEMBLING

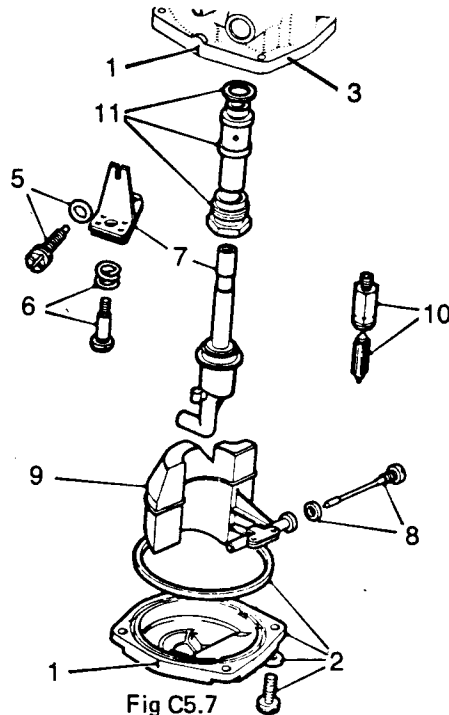
4. Reassemble the carburetter as follows:



- (1) Refer to Fig C5.6. Refit the seals (15) to the throttle spindle (14) and replace the spindle. Position the throttle spindle end seals just below the spindle housing flange.
- (2) Replace the throttle disc (13) onto the spindle ensuring that the disc is fitted in its original position.
- (3) Fit new throttle disc retaining screws (12). Ensure that the throttle disc is correctly positioned and closed correctly before tightening the retaining screws. Spread the split ends of the screws sufficiently to prevent turning.
- (4) Refit the throttle level and throttle actuating lever (11).
- (5) Replace the tab washer and nut (10) retaining the throttle levers. Lock the washer.
- (6) Replace the throttle lever return spring in the position noted in para 2, step (22).
- (7) Replace the O-ring, seals and dust cap onto the valve spindle (8) and refit the spindle.
- (8) Replace the gasket (7) and starter unit assembly (6). The starter unit valve is fitted with the cut

out towards the top retaining screw hole and its retaining plate is positioned with the slotted flange towards the throttle spindle.

- (9) Replace the starter unit cover plate (5) and retaining screws (4).
- (10) Refit the return spring (3) and the cam lever, locating the ends of the return spring in the position noted in para 2, step (16).
- (11) Replace the cam lever washer and retaining nut (2). Lock the washer.



- (12) Refer to Fig C5.7. Replace the jet bearing (11) and fibre washer. Secure with the locking nut.
- (13) Screw in the valve seat and replace the needle valve (10).

- (14) Replace the float (9). After fitting the float and valve, insert the carburetter so that the needle valve is held in the shut position by the weight of the float only. Check that the point indicated on the float (see Fig C5.8 opposite) is 1,5 mm to 0,5 mm below the level of the float chamber face. Adjust the float position by carefully bending the brass pad. Check that the float pivots correctly about the spindle.

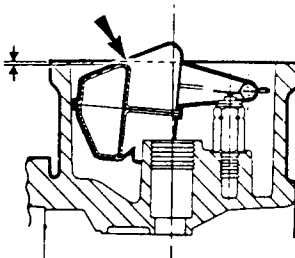
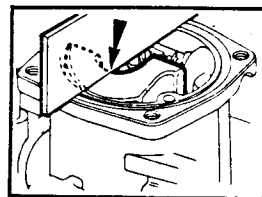


Fig C5.8

- (15) Replace the float pivot spindle and fibre-washer (8).

- (16) Fit the jet to the adjusting lever (7) and replace the jet complete. When fitting the jet assembly to the adjusting lever ensure that the jet head moves freely in the bi-metal cut out.
- (17) Replace the jet adjusting lever spring and retaining screw (6).
- (18) Refit the jet adjusting screw (5) and O-ring. Check that the small diameter of the jet adjusting screws engages the slot in the adjusting lever and set the jet flush with the bridge of the body.
- (19) Replace the bottom cover plate (3) and sealing ring (4) aligning the marks made on the cover plate and body in para 2, step (8). Tighten the retaining screws (2).

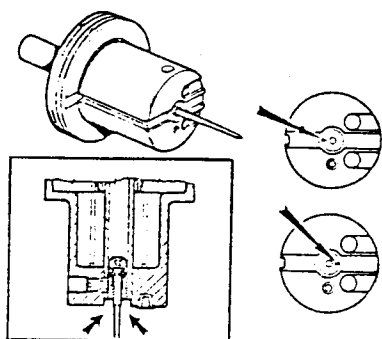


Fig C5.9

- (20) Refer to Fig C5.9. Replace the needle guide and spring. Use a new retaining screw when refitting the needle and ensure that the needle guide etch mark aligns correctly with the piston transfer holes (alternative specifications illustrated). After fitting the needle assembly, check that the shoulder of the needle aligns the full face of the piston (see para 2, step (6)).

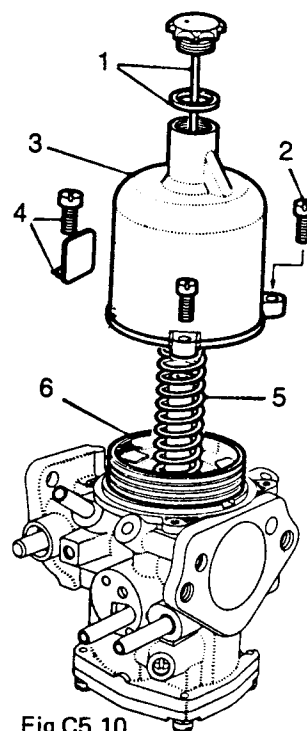


Fig C5.10

- (21) Refer to Fig C5.10. Replace the piston assembly (6) and piston spring (5).
 - (22) Fit the chamber assembly (4) vertically to the body without tilting it.
 - (23) Secure with the suction chamber retaining screws (2) not forgetting to replace the identity tag (3).
 - (24) Fill the piston damper housing with the correct grade of oil to the specified level and replace the damper (1) and washer.
5. Fit the carburettor to the engine (see Sub-section C4, Chapter 1).

SUB-SECTION C5

CHAPTER 2

FUEL PUMP - OVERHAUL

NOTE

The electrical components of the pump are sealed and cannot be repaired. For this reason, overhauling is confined to the piston assembly.

1. Overhaul the piston assembly as follows:

- (1) Remove the pump from the vehicle (see Sub-section C4, Chapter 2).
- (2) Clean the outside surface of the pump before dismantling.

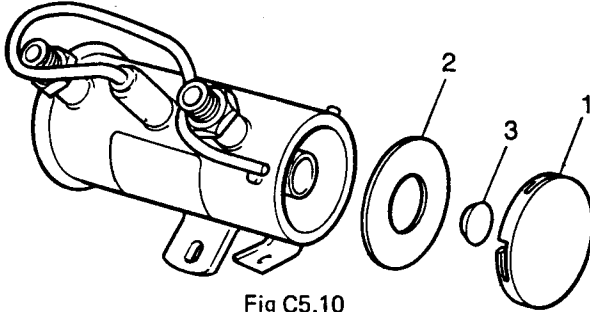


Fig C5.10

- (3) Refer to Fig C5.10. Release the end cover (1) from the bayonet fixing and lift out the rubber seal (2) and the magnet (3).

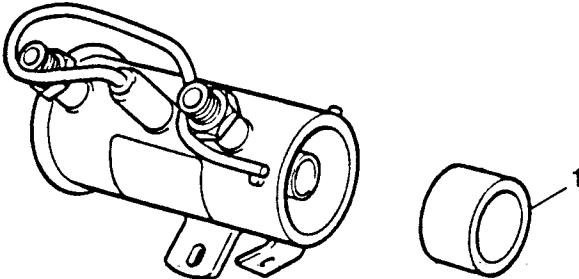


Fig C5.11

- (4) Refer to Fig C5.11. Withdraw the filter (1).

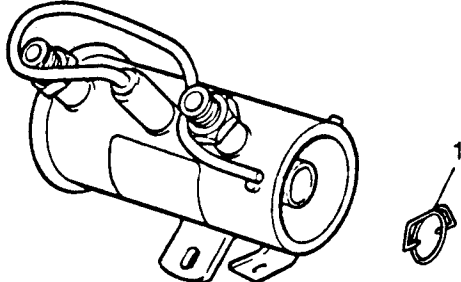


Fig C5.12

- (5) Refer to Fig C5.12. Remove the retaining ring (1).

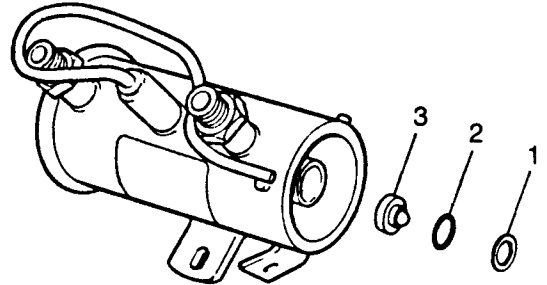


Fig C5.13

- (6) Refer to Fig C5.13. Remove the plain washer (1), the rubber seal (2) and the one-way valve (3).

CAUTION

The one-way valve must not be dismantled.

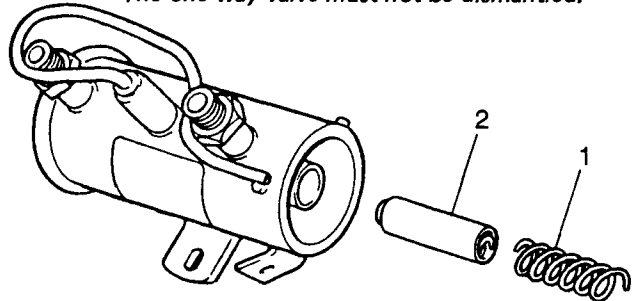


Fig C5.14

- (7) Refer to Fig C5.14. Withdraw the piston return spring (1) with the piston (2). If the piston remains in the pump tube, hold the pump body vertically (in the fitted position) and tap the closed end until the piston is released from its magnetic hold and drops out.

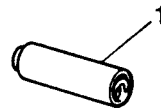


Fig C5.15

- (8) Refer to Fig C5.15. Remove the short rebound spring (1) from the piston.

CLEANING

2. To clean the components:
 - (1) Clean all components in petrol.
 - (2) Immerse the pump body in petrol and clean by using an air line inside the pump tube.

REASSEMBLY

3. Reassemble the pump as detailed below:

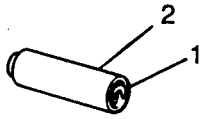


Fig C5.16

- (1) Refer to Fig C5.16. Fit the short rebound spring (1) into the end of the piston (2).

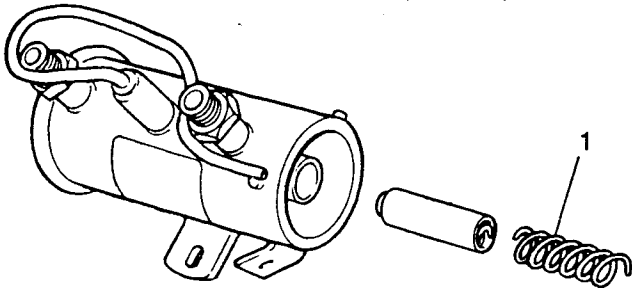


Fig C5.17

- (2) Refer to Fig C5.17. Fit the return spring (1) over the piston and insert the complete assembly into the pump body, rebound spring last.

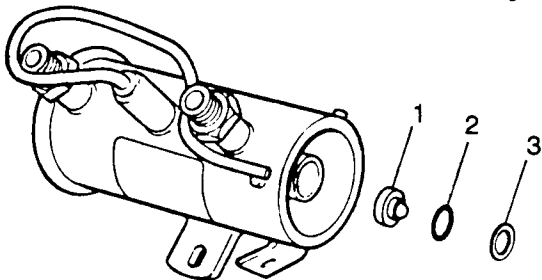


Fig C5.18

- (3) Refer to Fig C5.18. Fit the one-way valve (1), rubber seal (2) and plain washer (3) in that order into the pump body.

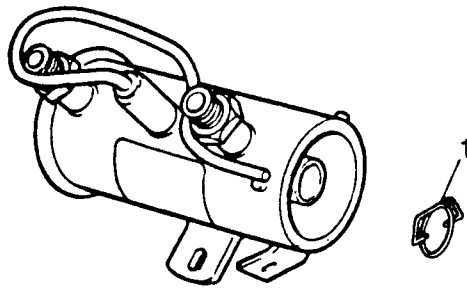


Fig C5.19

- (4) Refer to Fig C5.19. Replace the retaining ring (1).

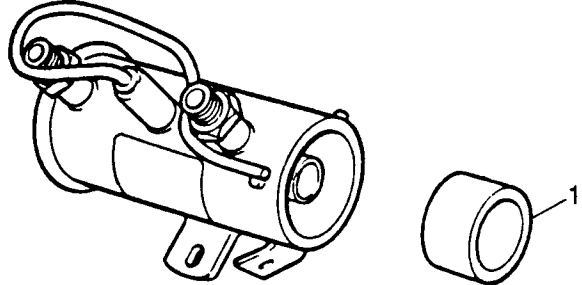


Fig C5.20

- (5) Refer to Fig C5.20. Replace the filter (1).

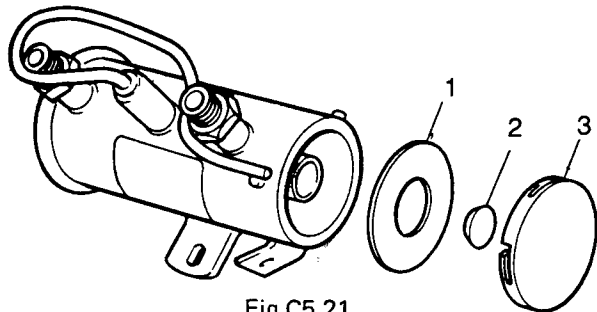


Fig C5.21

- (6) Refer to Fig C5.21. Fit the rubber seal (1) and magnet (2) into the end cover (3) and secure to the pump body with the bayonet fixing.
- (7) Refit the pump to the vehicle (see Sub-section C4, Chapter 2).

SUB-SECTION C6

MAINTENANCE

INTRODUCTION

1. Little regular maintenance is required on the fuel system other than regular checks for leaks from components and joints. Slow running adjustment of the carburettor is required at regular intervals and cleaning or replacement of the element in the fuel filter and pump should be carried out at the recommended intervals:

CARBURETTOR SLOW RUNNING ADJUSTMENT

2. Carry out the following adjustments at first service (1 500 km) and thereafter at every 10 000 km or six months.

- (1) Run the engine until normal operating temperature is obtained.
- (2) Remove the air intake box over the carburettors.

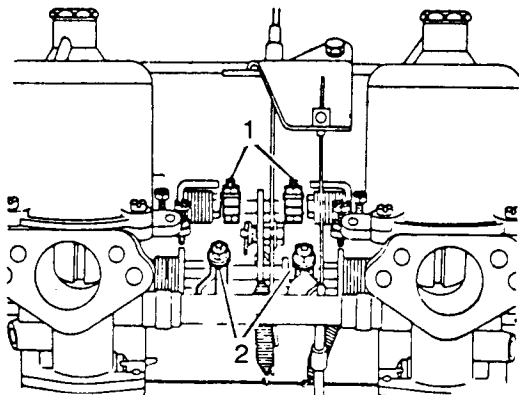


Fig C6.1

- (3) Refer to Fig C6.1. Slacken both clamping bolts (1) on the throttle spindle interconnection.
- (4) Slacken both clamping bolts (2) on the cold start interconnections.

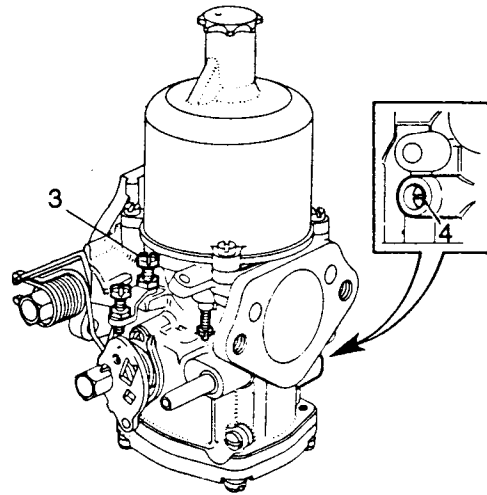
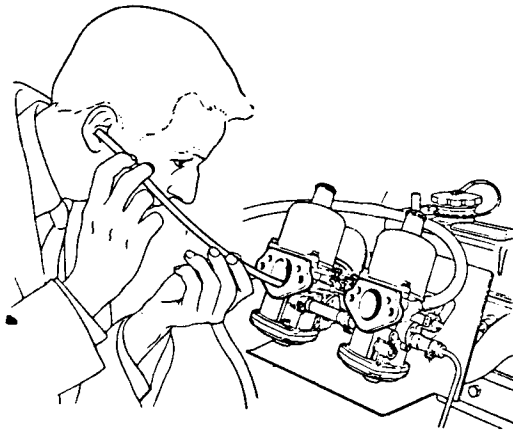


Fig C6.2

- (5) Refer to Fig C6.2. Use a listening tube to compare the intensity of the intake hiss on all carburettors and turn the throttle adjusting screws (3) until the hiss is the same. Alternatively use a balancing meter in accordance with makers instructions and balance the carburettors by altering the throttle adjusting screws until the correct idle speed and balance is achieved.
- (6) Turn the jet adjusting screw (4) on each carburettor clockwise to enrich or anti-clockwise to weaken, by the same amount until the fastest speed is indicated; turn each screw anti-clockwise until the engine speed just commences to fall. Turn each screw very slowly clockwise by the minimum amount until the maximum speed is regained.
- (7) Check the idle speed and re-adjust it as necessary with the throttle adjusting screws, turning each by the same amount.

CHANGING THE FUEL FILTER

- The fuel filter is located near the dash at the right hand side of the engine compartment. Replace the element every 20 000 km or 12 months.

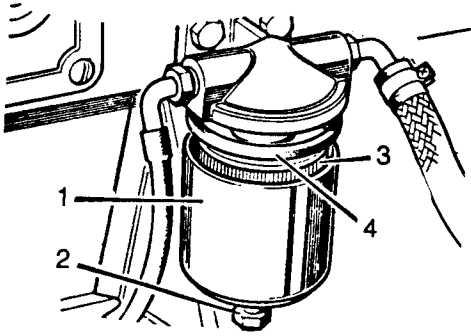


Fig C6.3

- Refer to Fig C6.3. Support the element holder (1).
- Unscrew the special bolt (2) at the bottom of the holder and remove the holder.
- Remove and discard the used element (3).
- Thoroughly clean the element holder in petrol.
- Check the upper and lower centre seals and the seal for the special bolt (2). Replace with new seals if any show signs of deterioration or damage.
- Fit the new element, large hole uppermost, into the holder using the seal (4) supplied with the element.
- Place the element holder in position and secure with the special bolt (2).
- Start the engine and check for fuel leaks around the filter.

CLEANING THE FUEL PUMP FILTER

- Clean the filter every 80 000 km or 48 months.
- The fuel pump must be removed for access to the filter. To remove the fuel pump:
 - Disconnect the fuel pump electrical lead at the snap connector.
 - Disconnect the fuel inlet pipe from the pump and plug the end of the pipe to prevent fuel leakage.
 - Disconnect the fuel outlet pipe.
 - Remove the two nuts securing the pump, remove the earth braid from the fixing points and remove the pump.

- To clean the filter:

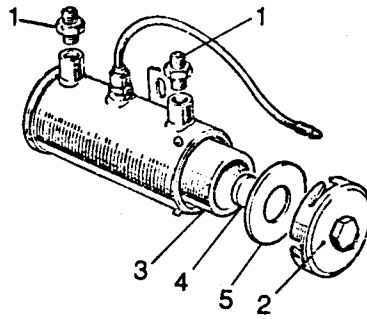


Fig C6.4

- Refer to Fig C6.4. Remove the inlet and outlet unions (1).
 - Release the end cover (2) from the bayonet fixing.
 - Withdraw the filter (3) from the pump body.
 - Clean the filter by blowing clean, dry air through the filter from the inside.
 - Remove the magnet (4) from the end cover and clean with a petrol moistened, lint-free cloth.
- To reassemble the pump:
 - Place the filter in the pump body.
 - Fit the magnet (4) to the end cover (2) using a new gasket (5).
 - Replace the end cover into its bayonet fixing.
 - Refit the inlet and outlet unions (1) to the pump body.
 - To refit the pump:
 - Position the pump to the chassis cross member with the union nearest to the electrical lead towards the front of the vehicle.
 - Ensure that the earth braid is correctly positioned and tighten the two nuts.
 - Reconnect the fuel outlet connection.
 - Remove the temporary plug and reconnect the fuel inlet connection.
 - Reconnect the electrical lead.
 - Run the engine to ensure that the pump is operating and is free of leaks.

SECTION CONTENTS LIST

SECTION D

IGNITION SYSTEM

SUB-SECTION	DESCRIPTION	PAGE
D1	DESCRIPTION AND SPECIFICATIONS	D1.1
D2	FAULT DIAGNOSIS AND CORRECTIVE ACTION	D2.1
D3	ADJUSTMENTS	D3.1
D4	REMOVAL AND REPLACEMENT PROCEDURES	D4.1
D5	DISTRIBUTOR - OVERHAUL	D5.1
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SUB-SECTION CONTENTS LIST

SUB-SECTION D1

DESCRIPTION AND SPECIFICATIONS

CHAPTER	DESCRIPTION	PAGE
1	DESCRIPTION OF THE IGNITION SYSTEM	D1.3
2	IGNITION SYSTEM SPECIFICATIONS	D1.4

SUB-SECTION D1

CHAPTER 1

DESCRIPTION OF THE IGNITION SYSTEM

INTRODUCTION

1. The ignition system comprises a coil, the distributor and the spark plugs, the LT supply to the system being provided by the battery.

COIL

2. The coil has two windings, one of which is fed by the battery and the other one providing the HT to the top of the distributor cap when the contact breaker points open.

DISTRIBUTOR

3. The distributor incorporates automatic timing control by centrifugal mechanism and a vacuum operated unit.

4. The weights of the centrifugal device fly out against the tension of small springs as the engine speed increases. The movement of the weights advances the contact breaker cams in relation to the distributor drive shaft to advance the ignition.

5. The vacuum unit is connected by small bore pipe to the inlet manifold. Reduced pressure in the manifold operates the vacuum unit, the vacuum varying with engine load. At small throttle openings with no load on the engine the high vacuum in the manifold causes the vacuum advance unit to advance the ignition. On hill climbs with a heavy load and large throttle openings the vacuum in the manifold is considerably reduced and the ignition is retarded.

SUB-SECTION D1

CHAPTER 2

IGNITION SYSTEM SPECIFICATIONS

INTRODUCTION

- Specifications for the ignition system are given in the following tables:

TABLE D1.1 - GENERAL DATA

TABLE D1.2 - TORQUE SPECIFICATIONS

TABLE D1.1 - GENERAL DATA

ITEM	DESCRIPTION	
Coil	Lucas 11C12 - oil filled - 12 V	
Distributor	Lucas 45D6	
- contact point gap	0,35 to 0,40 mm	
- cam dwell angle	33° ± 5°	
- test data (deceleration r/min)	Camshaft r/min	Degrees
	2400	14-18
	2000	9-13
	1600	4-8
	1300	1-5
- vacuum advance - starts	No advance below 800 r/min	
- vacuum advance - ends	76 mm Hg	
Ignition timing (Stroboscopic) - with vacuum advance disconnected	230 mm Hg	
Spark plug - type	12° B.T.D.C. at 1000 r/min	
Spark plug - gap	Champion N9Y	
	0,625 - 0,660 mm	

TABLE D1.2 - TORQUE SPECIFICATIONS

ITEM	TORQUE (N.m)
Distributor flange retaining screws	10 to 13

SUB-SECTION D2

FAULT DIAGNOSIS AND CORRECTIVE ACTION

INTRODUCTION

1. Fault diagnosis and suggested action to cure a fault on the ignition system is covered in this Sub-section. Table D2.1 gives a list of symptoms, the probable cause and the necessary remedial action. The Table is not exhaustive and faults may occur which are not listed. In this case the suspected components should be removed for closer inspection or overhaul.

TABLE D2.1 - IGNITION SYSTEM FAULT DIAGNOSIS CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Engine will not fire	Battery discharged. Distributor contact points dirty, pitted or maladjusted. Distributor cap dirty, cracked or tracking. Carbon brush inside distributor cap not touching rotor. Faulty cable or loose connection in low tension circuit. Distributor rotor arm cracked. Faulty coil. Broken contact breaker spring. Contact points stuck open.	Recharge battery. Clean and reset points. Clean or replace cap. Replace brush. Check and remedy. Replace rotor arm. Replace coil. Replace springset. Replace springset.
Engine misfires	Weak contact breaker spring. High tension plug and coil leads cracked or perished. Spark plug(s) loose. Spark plug insulation cracked. Spark plug gap incorrectly set. Ignition timing too far advanced.	Replace spring. Replace leads. Tighten plugs. Replace plug. Reset gaps. Reset ignition timing.

SUB-SECTION CONTENTS LIST

SUB-SECTION D3

ADJUSTMENTS

CHAPTER	DESCRIPTION	PAGE
1	DISTRIBUTOR CONTACT GAP - ADJUSTING	D3.3
2	IGNITION TIMING - STATIC ADJUSTMENT	D3.4
3	SPARK PLUG - CLEANING AND ADJUSTING	D3.5

SUB-SECTION D3

CHAPTER 1

DISTRIBUTOR CONTACT GAP - ADJUSTING

1. To adjust the contact gap:

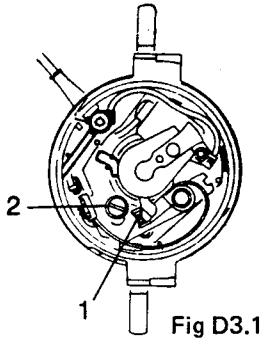


Fig D3.1

- (1) Refer to Fig D3.1. Lever the two clips away from the distributor head and lift off the head.

- (2) Turn the crankshaft until the contact gap (1) is fully open.
- (3) Check the gap with feelers. To be 0,35 to 0,40 mm.
- (4) If the gap is more or less than that specified, loosen the screw (2), set the gap to the correct value and tighten the screw.
- (5) Recheck the gap and reset if necessary.

SUB-SECTION D3

CHAPTER 2

IGNITION TIMING - STATIC ADJUSTMENT

1. To adjust the ignition timing without using a stroboscope:

- (1) Adjust the distributor contact gap (see Sub-section D3, Chapter 1).

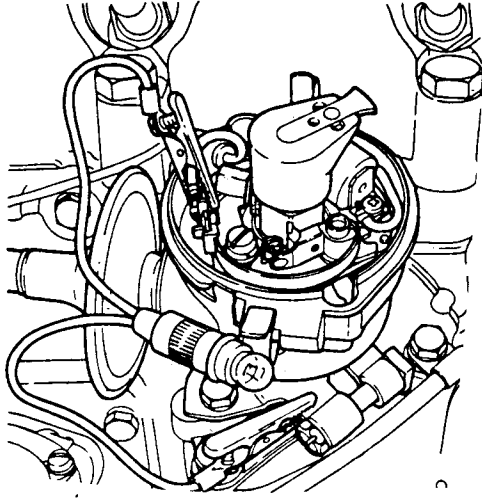


Fig D3.2

- (2) Refer to Fig D3.2. Connect a test lamp to the points indicated.

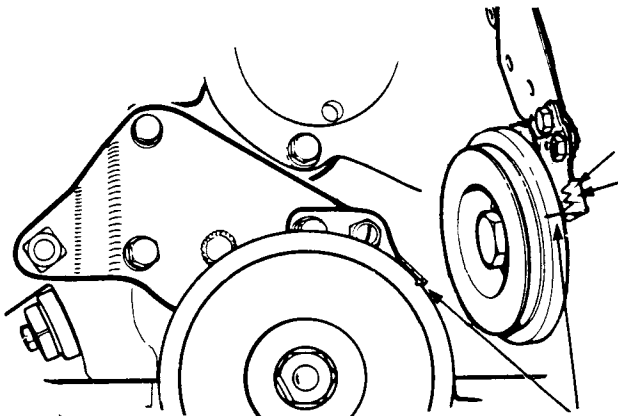


Fig D3.3

TDC

- (3) Refer to Fig D3.3. Rotate the crankshaft in the engine run direction until the mark (1) on the crankshaft pulley is approximately 20° before the correct setting for TDC.
- (4) Carefully rotate the crankshaft further until the lamp just comes on. If the timing is correct the crankshaft pulley mark will now be opposite the setting for 12° BTDC.

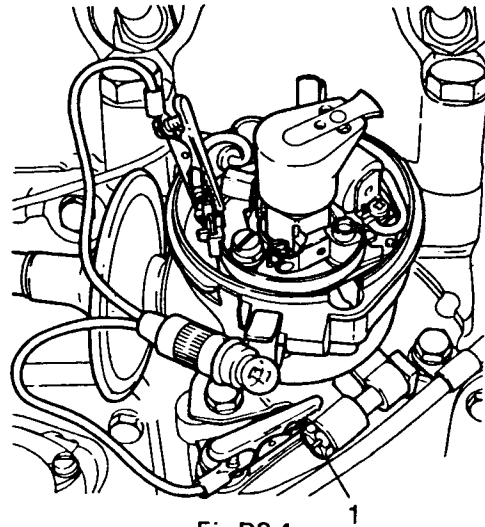


Fig D3.4

- (5) Refer to Fig D3.4. If the pulley mark is not in the correct position, loosen the distributor clamp nut (1).
- (6) Rotate the distributor body counterclockwise past the test lamp illumination position. Carefully rotate clockwise until the lamp just goes out. Tighten the clamp nut (1) with the unit in this position.
- (7) Repeat steps (4) onwards.
- (8) Remove the test lamp circuit.

SUB-SECTION D3

CHAPTER 3

SPARK PLUGS - CLEANING AND ADJUSTING

REMOVAL

1. To remove a spark plug:
 - (1) Withdraw the leads by pulling on the end shrouds. **DO NOT PULL THE LEADS.**
 - (2) Using the special spanner and tommy bar provided with the vehicle, unscrew and remove the spark plug and washer.

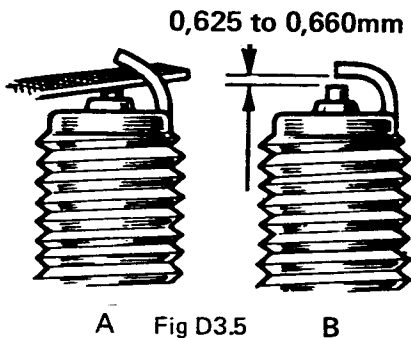
CLEANING

2. Clean the plug as follows:
 - (1) Fit the plug into a plug cleaning machine.
 - (2) Wobble the plug with a circular motion while operating the abrasive blast for a maximum of four seconds.

CAUTION

Excessive abrasive blasting will erode the insulator nose.

- (3) Change to air blast only and continue to wobble the plug for a minimum of 30 seconds to remove abrasive grit from the plug cavity.
- (4) Wire-brush the plug threads. Open the gap slightly.



A Fig D3.5 B

- (5) Refer to Fig D3.5. Using a point file (A) square off the electrode surfaces.

- (6) Set the electrode gap (B) to 0,625 to 0,660 mm.
- (7) Test the plug in accordance with the cleaning machine manufacturer's instructions. If satisfactory, fit the plug into the engine.
- (8) Examine the high tension leads, including the coil to distributor lead, for insulation cracking or corrosion at end contacts. Fit new leads as necessary.
- (9) In addition to the correct firing order, the high tension leads must be fitted in correct relation to each other to avoid cross firing.
- (10) When pushing the high tension lead onto the plug, ensure that the end ferrules within the shrouds are firmly seated on the plugs. A guide is that the shroud is within 6 mm of the metal body of the plug.

SUB-SECTION CONTENTS LIST

SUB-SECTION D4

REMOVAL AND REPLACEMENT PROCEDURES

CHAPTER	DESCRIPTION	PAGE
1	COIL - REMOVAL AND REPLACEMENT	D4.3
2	DISTRIBUTOR - REMOVAL AND REPLACEMENT	D4.4
3	IGNITION STARTER SWITCH - REMOVAL AND REPLACEMENT	D4.5

SUB-SECTION D4

CHAPTER 1

COIL - REMOVAL AND REPLACEMENT

REMOVAL

1. To remove the ignition coil:

(1) Disconnect the battery earth lead.

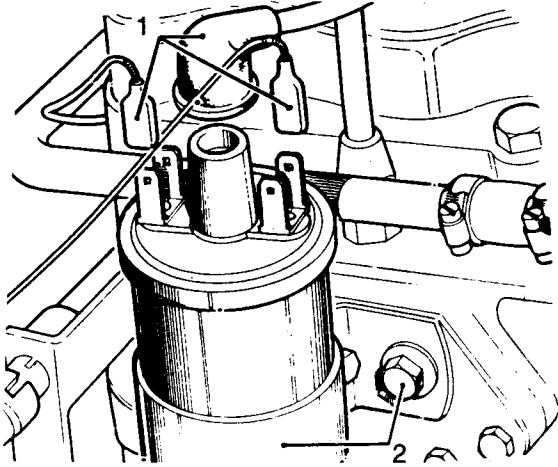


Fig D4.1

(2) Refer to Fig D4.1. Disconnect the leads (1) from the ignition coil.

(3) Unscrew the fixings (2) and remove the coil.

REPLACEMENT

2. Replace the coil as follows:

(1) Place the coil in position and secure with the fixings (2).

(2) Reconnect the electrical leads (1).

NOTE

The electrical leads are fitted with male and female connectors. Ensure that they are fitted to the corresponding blade on the ignition coil.

(3) Reconnect the battery earth lead.

SUB-SECTION D4

CHAPTER 2

DISTRIBUTOR - REMOVAL AND REPLACEMENT

REMOVAL

1. To remove the distributor:

- (1) Disconnect the battery.
- (2) Remove the distributor cap.

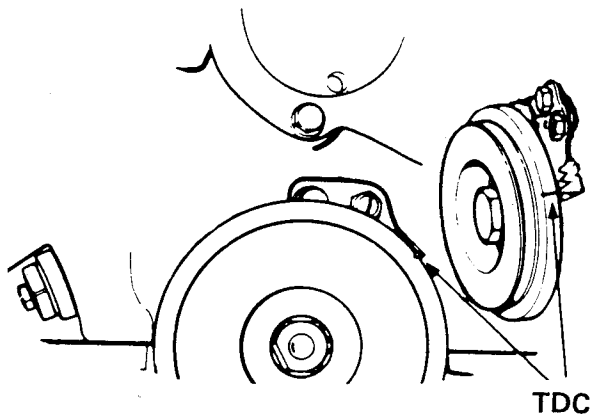


Fig D4.2

- (3) Refer to Fig D4.2. Rotate the crankshaft until the mark (1) on the crankshaft pulley lines up with the TDC point (2) while at the same time the distributor rotor (Fig D4.3) is pointing to the cap segment which is connected to the spark plug of No 1 cylinder (No 1 cylinder is the front cylinder).

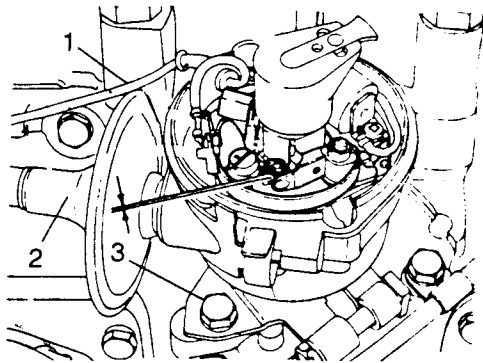


Fig D4.3

- (4) Refer to Fig D4.3. Disconnect the distributor low tension lead (1).
- (5) Disconnect the vacuum pipe from the vacuum advance unit (2).
- (6) Remove the two screws retaining the distributor clamp flange (3) to the cylinder block.
- (7) Withdraw the distributor upwards.

REPLACEMENT

2. Replace the distributor as follows:

- (1) Fit the distributor to the cylinder block with the pinch bolt on the flange outwards.
- (2) Fit the two retaining screws through the flange but do not tighten at this stage.
- (3) Refit the vacuum pipe to the vacuum advance unit.
- (4) Fit the low tension fly lead to the floating connection.
- (5) With the crankshaft and distributor rotor set as in para 1, step (3), rotate the distributor within the limits of the slotted holes in the flange until the contact breaker points are just opening.
- (6) Tighten the flange retaining screws to 10 to 13 N.m.
- (7) Refit the distributor cap.
- (8) Reconnect the battery.

NOTE

For a more accurate setting of the ignition timing see Sub-section D3, Chapter 2.

SUB-SECTION D4

CHAPTER 3

IGNITION STARTER SWITCH - REMOVAL AND REPLACEMENT

REMOVAL

1. To remove the switch:
 - (1) Disconnect the battery earth lead.
 - (2) Remove the upper half of the switch shroud from the steering column (four screws).
 - (3) Disconnect the leads from the ignition switch.

Models with a Steering Column Lock:

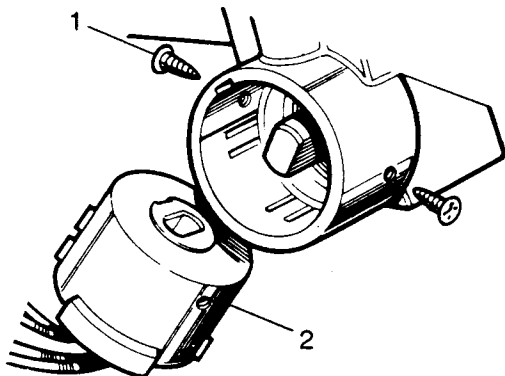


Fig D4.4

- (4) Refer to Fig D4.4. Remove the screws (1) locating the switch in the housing and withdraw the switch (2).

Models without a Steering Column Lock:

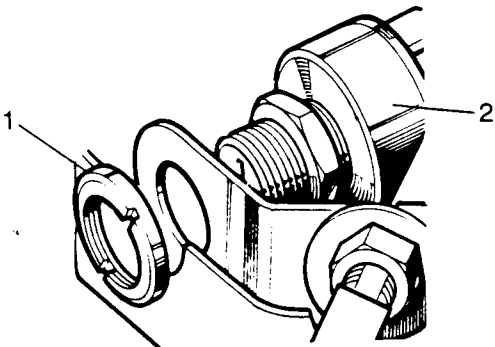


Fig D4.5

- (5) Refer to Fig D4.5. Unscrew the locking ring (1) and withdraw the switch (2).

REPLACEMENT

2. To replace the ignition starter switch:
 - (1) Fit the switch into position with the keyhole vertical and the circular cut-out in the keyhole at the bottom.
 - (2) Secure with two screws (models with steering column lock) or the locking ring.

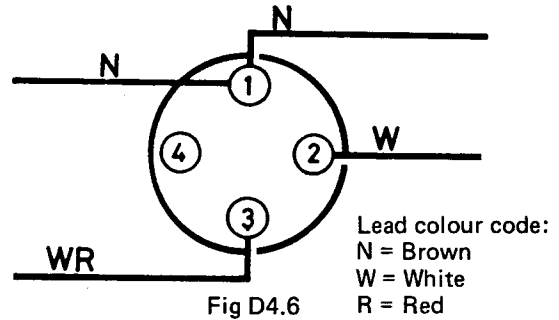


Fig D4.6

- (3) Refer to Fig D4.6. Reconnect the leads to the ignition switch.
- (4) Replace the steering column upper shroud (four screws).
- (5) Reconnect the battery earth lead.

SUB-SECTION D5

DISTRIBUTOR - OVERHAUL

DISMANTLING

1. To dismantle the distributor:

- (1) Remove the distributor (see Sub-section D4, Chapter 2).

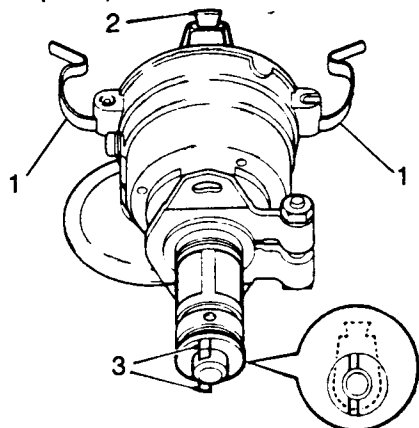


Fig D5.1

- (2) Refer to Fig D5.1. Spring back the clips (1) and remove the moulded cover (the dust cap).
- (3) Note the relative position of the offset drive dog (3) to the rotor arm lobe (2). The centre line of the drive dog is parallel with and offset to the centre line of the rotor arm.

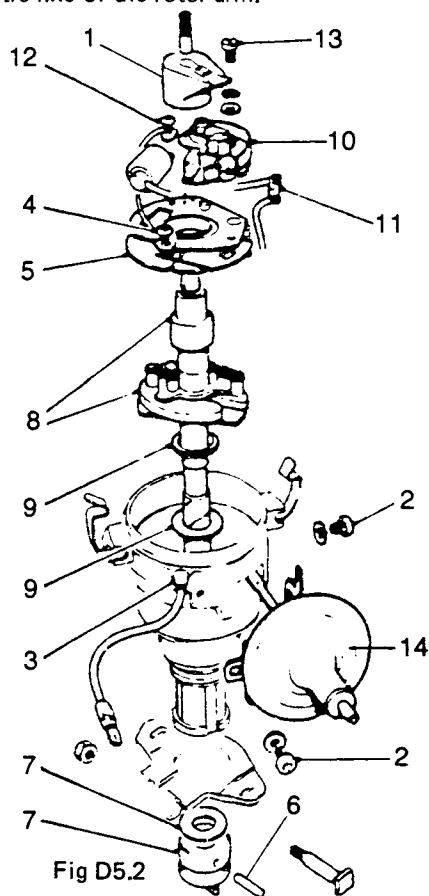


Fig D5.2

- (4) Refer to Fig D5.2. Remove the rotor arm (1).

- (5) Remove the cam oiling pad.

- (6) Remove the two screws (2) retaining the vacuum unit (14), noting that two prongs protrude downwards from the base plate and straddle one of the retaining screws. Disengage the operating arm from the movable plate and remove the assembly.

- (7) Push the grommet and low tension lead (3) through the body towards the inside of the housing.

- (8) Remove the base plate retaining screw (4).

- (9) Lever the base plate (5) from its retaining groove in the body.

- (10) Remove the base and bearing plate assembly (5).

- (11) Drive out the parallel pin (6) retaining the drive dog.

- (12) Remove the drive dog and thrust washer (7) noting that the raised pips on the washer face the drive dog.

- (13) Remove the centre spindle complete with the automatic advance weights and springs (8).

- (14) Remove the steel washer and nylon spacer from the spindle (9).

- (15) Push the moving contact spring (10) towards the centre of the distributor and unclip the low tension lead (11).

- (16) Remove the screw (12) retaining the earth lead tag and the capacitor.

- (17) Remove the screw (13) spring and plain washer retaining the fixed contact and remove the contact assembly.

INSPECTION

2. Inspect the distributor components:

- (1) Examine the fit of the drive spindle in its bush, and the spindle cam for wear. The automatic advance mechanism should not be dismantled other than to remove the control springs. If any of the moving parts are excessively worn or are damaged the complete spindle assembly must be renewed. If the spindle bearing is worn allowing excessive side play, the complete distributor must be replaced.
- (2) Check the spring between the fixed and movable plates. Operate the plate and examine for freedom of movement and excessive wear. Renew as an assembly.