Chapter 5 Part B:
Ignition system

Contents

Degrees of difficulty

Easy, suitable for novice with little experience 

Fairly easy, suitable for beginner with some experience 

Fairly difficult, suitable for competent DIY mechanic 

Difficult, suitable for experienced DIY mechanic 

Very difficult, suitable for expert DIY or professional 

Specifications

System type

All engines except XU5M2/Z, XU5M3/Z, XU5M3/L and TU1M/L	Electronic breakerless ignition system
XU5M2/Z, XU5M3/Z, XU5M3/L and TU1M/L engines	Static distributorless ignition system

Distributor

Rotor arm rotation	Anti-clockwise
Firing order	1 - 3 - 4 - 2 (No 1 cylinder at flywheel end of engine)

Ignition timing (vacuum hose disconnected)

XV8 and XW7 engines	6° BTDC at 650 rpm
XY7 engines	8°BTDC at 650 rpm
XY8 engines:	
Early models with M152E advance curve	0° BTDC at 950 rpm
Later models with M159E advance curve	8° BTDC at 850 to 950 rpm
XU5J engines (up to VIN 5520364)	30° BTDC at 3500 rpm or 6° BTDC at 700 rpm
XU5J engines (from VIN 5520364)	10° BTDC at 850 ± 50 rpm
XU5JA and XU5JA/K engines	10° BTDC at 900 rpm
XU51C and XU51C/K engines	10° BTDC at 750 rpm
XU5M2/Z, XU5M3/Z and XU5M3/L engines	Not adjustable, controlled by MMFD Mono-point G5/6 engine management system
XU9JA and XU9JA/K engines	5° BTDC at 700 rpm
XU9JA/Z and XU9JA/L engines	Not adjustable, controlled by Motronic M1.3 engine management system
XU9J1/Z and XU9J1/L engines	10° BTDC at 900 rpm
TU series engines (except TU1M/L)	8° BTDC at idling speed (see Chapter 4)
TU1M/L engines	Not adjustable, controlled by MMFD Mono-point G6 engine management system

Ignition coil

Ignition HT coil resistances:*	
Electronic breakerless ignition systems:	
Primary windings	0.8 ohms
Secondary windings	6.5 K ohms
Static distributorless ignition systems:	
Primary windings	0.5 to 0.8 ohms
Secondary windings - Bosch coil	14.6 K ohms
Secondary windings - Valeo coil	8.6 K ohms

**The above results are approximate values and are accurate only when the coil is at 20°C. See text for further information*

Spark plugs	See Chapter 1 Specifications

1 General information

Electronic breakerless ignition system

A number of different breakerless ignition systems are used on 205 models according to engine type and fuel system fitted. Some are simple self-contained systems and some work in conjunction with the fuel system to form an integrated engine management package.

In order that the engine may run correctly it is necessary for an electrical spark to ignite the fuel/air mixture in the combustion chamber at exactly the right moment in relation to engine speed and load.

Basically the ignition system functions as follows. Low tension voltage from the battery is fed to the ignition coil, where it is converted into high tension voltage. The high tension voltage is powerful enough to jump the spark plug gap in the cylinder many times a second under high compression pressure, providing that the ignition system is in good working order.

The distributor contains a reluctor mounted onto its shaft and a magnet and stator fixed to its body. An ignition amplifier unit is mounted either remotely, adjacent to the ignition coil, or on the side of the distributor body.

When the ignition is switched on but the engine is stationary the transistors in the amplifier unit prevent current flowing through the ignition system primary (LT) circuit.

As the crankshaft rotates, the reluctor moves through the magnetic field created by the stator. When the reluctor teeth are in alignment with the stator projections a small AC voltage is created. The amplifier unit uses this voltage to switch the transistors in the unit and complete the ignition system primary (LT) circuit.

As the reluctor teeth move out of alignment with the stator projections the AC voltage changes and the transistors in the amplifier unit are switched again to interrupt the primary (LT) circuit. This causes a high voltage to be induced in the coil secondary (HT) windings which then travels down the HT lead to the distributor and onto the relevant spark plug.

The ignition is advanced and retarded automatically by centrifugal weights and a vacuum capsule or by the engine management electronic control unit to ensure that the spark occurs at the correct instant in relation to engine speed and load.

Static distributorless ignition system

A static ignition system is used on models with MMFD Mono-point G5 and G6 engine management systems. The system is integrated with the fuel injection system, and is controlled by the MMFD electronic control unit (ECU). The ECU receives information from various sensors, and using this information, the optimum ignition advance for the prevailing engine conditions is selected from a series of "mapped" values stored in the ECU memory (see Chapter 4B for further information).

The single ignition module replaces the amplifier unit, HT coil and distributor in a conventional system. The ignition module incorporates a double coil, with four high-tension outputs to the spark plugs, which dispenses with the requirement for a conventional distributor and rotor arm.

Each coil is controlled by the MMFD electronic control unit. Each time one of the coil primary circuits is switched, two sparks are provided, one to a cylinder on the compression stroke, and one to a cylinder on the exhaust stroke. The spark to the cylinder on the exhaust stroke is effectively a "wasted spark", but has no detrimental effect on the performance of the engine.

2 Ignition system - testing

Warning: Voltages produced by an electronic ignition system are considerably higher than those produced by conventional ignition systems. Extreme care must be taken when working on the system with the ignition switched on. Persons with surgically-implanted cardiac pacemaker devices should keep well clear of the ignition circuits, components and test equipment.

Models with electronic breakerless ignition systems

Note: *Refer to the warning given in Section 1 of Part A of this Chapter before starting work. Always switch off the ignition before disconnecting or connecting any component and when using a multi-meter to check resistances.*

General

1 The components of electronic ignition systems are normally very reliable; most faults are far more likely to be due to loose or dirty connections or to "tracking" of HT voltage due to dirt, dampness or damaged insulation than to the failure of any of the system's components. **Always** check all wiring thoroughly before condemning an electrical component and work methodically to eliminate all other possibilities before deciding that a particular component is faulty.

2 The old practice of checking for a spark by holding the live end of an HT lead a short distance away from the engine is not recommended; not only is there a high risk of a powerful electric shock, but the HT coil or amplifier unit will be damaged. Similarly, **never** try to "diagnose" misfires by pulling off one HT lead at a time.

Engine will not start

3 If the engine either will not turn over at all, or only turns very slowly, check the battery and starter motor. Connect a voltmeter across the battery terminals (meter positive probe to battery positive terminal), disconnect the ignition coil HT lead from the distributor cap and earth it, then note the voltage reading obtained while turning over the engine on the starter for (no more than) ten seconds. If the reading obtained is less than approximately 9.5 volts, first check the battery, starter motor and charging system as described in Part A of this Chapter.

4 If the engine turns over at normal speed but will not start, check the HT circuit by connecting a timing light (following the manufacturer's instructions) and turning the engine over on the starter motor; if the light flashes, voltage is reaching the spark plugs, so these should be checked first. If the light does not flash, check the HT leads themselves followed by the distributor cap, carbon brush and rotor arm using the information given in Chapter 1.

5 If there is a spark, check the fuel system for faults referring to the relevant part of Chapter 4 for further information.

6 If there is still no spark, check the voltage at the ignition HT coil "+" terminal; it should be the same as the battery voltage (ie, at least 11.7 volts). If the voltage at the coil is more than 1 volt less than that at the battery, check the feed back through the fusebox and ignition switch to the battery and its earth until the fault is found.

7 If the feed to the HT coil is sound, check the coil's primary and secondary winding resistance as described later in this Chapter; renew the coil if faulty, but be careful to check carefully the condition of the LT connections themselves before doing so, to ensure that the fault is not due to dirty or poorly-fastened connectors.

8 If the HT coil is in good condition, the fault is probably within the amplifier unit or distributor stator assembly. Testing of these components should be entrusted to a Peugeot dealer.

Engine misfires

9 An irregular misfire suggests either a loose connection or intermittent fault on the primary circuit, or an HT fault on the coil side of the rotor arm.

10 With the ignition switched off, check carefully through the system ensuring that all connections are clean and securely fastened. If the equipment is available, check the LT circuit as described above.

11 Check that the HT coil, the distributor cap and the HT leads are clean and dry. Check the leads themselves and the spark plugs (by substitution, if necessary), then check the distributor cap, carbon brush and rotor arm as described in Chapter 1.

12 Regular misfiring is almost certainly due to a fault in the distributor cap, HT leads or spark

plugs. Use a timing light (paragraph 4 above) to check whether HT voltage is present at all leads.

13 If HT voltage is not present on any particular lead, the fault will be in that lead or in the distributor cap. If HT is present on all leads, the fault will be in the spark plugs; check and renew them if there is any doubt about their condition.

14 If no HT is present, check the HT coil; its secondary windings may be breaking down under load.

Models with static distributorless ignition systems

15 If a fault appears in the engine management (fuel injection/ignition) system first ensure that the fault is not due to a poor electrical connection or poor maintenance; ie, check that the air cleaner filter element is clean, the spark plugs are in good condition and correctly gapped, that the engine breather hoses are clear and undamaged, referring to Chapter 1 for further information. Also check that the throttle cable is correctly adjusted as described in the relevant part of Chapter 4. If the engine is running very roughly, check the compression pressures and the valve clearances as described in Chapter 2B or 2C.

16 If these checks fail to reveal the cause of the problem the vehicle should be taken to a suitably equipped Peugeot dealer for testing. A wiring block connector is incorporated in the engine management circuit into which a special electronic diagnostic tester can be plugged. The tester will locate the fault quickly and simply alleviating the need to test all the system components individually which is a time consuming operation that carries a high risk of damaging the ECU.

17 The only ignition system checks which can be carried out by the home mechanic are those described in Chapter 1, relating to the spark plugs, and the ignition coil test described in this Chapter. If necessary, the system wiring and wiring connectors can be checked as described in Chapter 12 ensuring that the ECU wiring connector(s) have first been disconnected.

3 Ignition HT coil - removal, testing and refitting

Note*: On models with static distributorless ignition systems, the ignition HT coil is an integral part of the ignition module. Refer to Section 6 for removal and refitting procedures.*

Removal

All engines except TU series

1 The ignition HT coil is located at the left-hand side of the engine compartment mounted on the side of the suspension strut tower.

2 Disconnect the battery negative lead.

3.3 On all engines except TU series, access to the coil and ignition module is gained after sliding up the protective cover

3 Slide the cover off the coil and adjacent ignition module **(see illustration)**.

4 Disconnect the wiring at the coil LT terminals, and the HT lead at the coil centre terminal.

5 Release the coil mounting clamp and remove the coil.

TU series engines

6 The ignition HT coil is mounted on the left-hand end of the cylinder head, above the distributor.

7 Disconnect the battery negative lead.

8 Refer to the relevant Part of Chapter 4 and remove the air cleaner assembly. Once the air cleaner is removed, move aside any pipes, hoses or wiring as necessary for improved access.

9 Where applicable, disconnect the wiring connector from the capacitor mounted on the coil mounting bracket and release the TDC sensor wiring connector from the bracket.

10 Disconnect the HT lead from the coil then depress the retaining clip and disconnect the coil wiring connector **(see illustration)**.

11 Slacken and remove the two retaining bolts and remove the coil and mounting bracket from the cylinder head. Where necessary, slacken and remove the four screws and nuts and separate the HT coil and mounting bracket.

Testing

12 Testing of the coil consists of using a multimeter set to its resistance function, to check the primary (LT "+'" to "-" terminals) and secondary (LT "+" to HT lead terminal) windings for continuity, bearing in mind that on the four output, static type HT coil there are two sets of each windings. Compare the results obtained to those given in the *Specifications* at the start of this Chapter. Note the resistance of the coil windings will vary slightly according to the coil temperature, the results in the *Specifications* are approximate values for when the coil is at 20°C.

13 Check that there is no continuity between the HT lead terminal and the coil body/mounting bracket.

14 If the coil is thought to be faulty, have your findings confirmed by a Peugeot dealer before renewing the coil.

3.10 Disconnecting the coil wiring connector (arrowed) on TU series engines

Refitting (all models)

15 Refitting is a reversal of the relevant removal procedure ensuring that the wiring connectors are securely reconnected and, where necessary, the HT leads are correctly connected.

4 Distributor (breakerless ignition systems) - removal and refitting

Removal

All engines except TU series

1 Disconnect the battery negative lead.

2 Remove the air cleaner and/or inlet duct, as necessary for access, with reference to the relevant Part of Chapter 4.

3 Identify the HT leads for position then disconnect them from the spark plugs.

4 Slide off the ignition coil cover and disconnect the HT lead from the coil.

5 Pull back the plastic cover then unclip and remove the distributor cap **(see illustration)**. Note that on certain later models the cap is retained by two screws instead of clips.

6 Disconnect the wiring at the connector, where necessary pulling out the spring clip first.

7 Pull the hose from the vacuum advance unit.

8 Mark the distributor mounting flange in relation to the cylinder head or thermostat housing as applicable.

4.5 Pull back the plastic cover then unclip and remove the distributor cap

4.9a On non-TU series engines, unscrew the mounting nuts . . .

4.9b . . . and remove the distributor

4.15 Disconnect the distributor wiring connector on TU series engines

9 Unscrew the mounting nuts, remove the small plates, and withdraw the distributor **(see illustrations)**.

10 Check the condition of the O-ring on the mounting flange and renew it if necessary.

TU series engines

11 Remove the ignition HT coil (Section 3).

12 Identify the HT leads for position, then disconnect them from the spark plugs.

13 Unbolt the HT lead support from the cylinder head.

14 Pull back the plastic cover, then extract the screws and remove the distributor cap.

15 Disconnect the wiring at the connector **(see illustration)**.

16 Pull the hose from the vacuum advance unit.

17 Mark the distributor mounting flange in relation to the distributor/fuel pump housing **(see illustration)**.

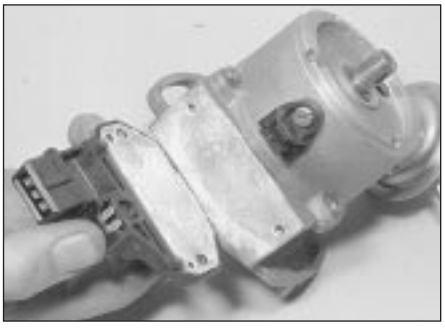
18 Unscrew the mounting nuts, remove the small plates, and withdraw the distributor **(see illustration)**.

19 Check the condition of the O-ring on the mounting flange, and renew it if necessary.

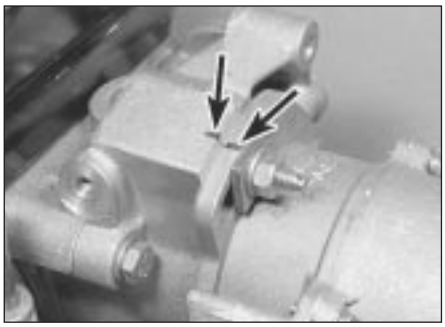
Refitting

All engines

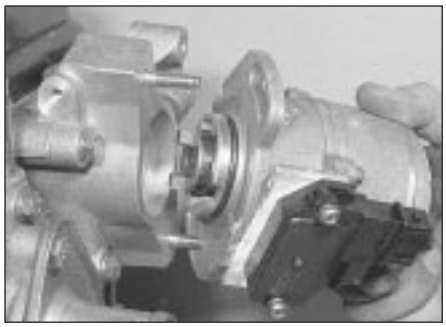
20 Refitting is a reversal of removal, but turn the rotor arm as required to align the lugs with the offset slot in the camshaft. If the old distributor is being refitted, align the previously made marks before tightening the mounting nuts. If fitting a new distributor, initially set the distributor in the middle of the slotted holes or follow the procedure given in Section 8, then finally adjust the ignition timing (Section 8).



5.9 Removing the ignition amplifier on TU series engines



4.17 Mark the distributor and housing . . .



4.18 . . . then remove the distributor

5 Ignition amplifier (breakerless ignition systems) - removal and refitting

Removal

All engines except TU series

1 The ignition amplifier unit is located at the left-hand side of the engine compartment mounted on the side of the suspension strut tower.

2 Disconnect the battery negative lead.

3 Slide the cover off the ignition HT coil and amplifier.

4 Disconnect the amplifier wiring harness.

5 Remove the screws and withdraw the amplifier from the mounting plate.

TU series engines

6 The amplifier unit is attached to the side of the distributor.

7 Disconnect the battery negative lead.

8 Disconnect the amplifier wiring at the connector.

9 Remove the two screws and withdraw the amplifier from the distributor, taking care not to bend the terminals **(see illustration)**.

10 Do not wipe away the special heat-conductive grease, as this protects the semi-conductor components within the amplifier. If necessary, obtain new grease from a Peugeot dealer.

Refitting

All engines

11 Refitting is a reversal of removal. On TU series engines, make sure that the special grease is spread evenly over the mating surfaces of both the distributor and amplifier unit.

6 Ignition module (distributorless ignition systems) - removal and refitting

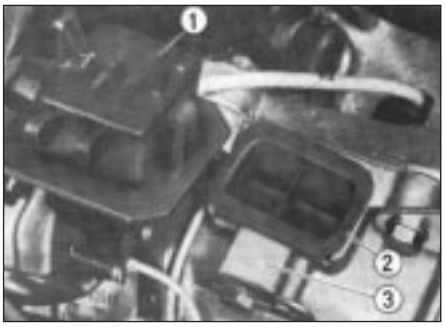
Removal

1 The ignition module is mounted on the left-hand end of the cylinder head.

2 Disconnect the battery negative lead.

3 Where necessary, remove the air cleaner ducting for improved access.

6.5 HT lead connections on the static distributorless ignition module



7.1 Timing plate components on XV, XW and XY series engines

1 Diagnostic socket 3 Timing plate
2 Cover

4 Depress the retaining clip and disconnect the wiring connector from the module.
5 Make a note of the correct fitted positions of the HT leads then disconnect them from the module terminals **(see illustration)**.
6 Undo the four retaining screws securing the module to its mounting bracket and remove it from the engine.

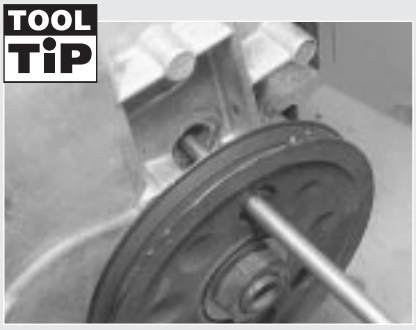
Refitting

7 Refitting is a reversal of removal.

7 Timing plate (breakerless ignition systems) - adjustment

Note*: Timing plate adjustment is only possible on models fitted with XV, XW and XY series engines. Peugeot special tool 80133 or a suitable alternative will be required for the adjustment procedure.*
1 The timing plate which is located in the aperture under the plastic cover at the top of the flywheel housing can be moved within the limits of its elongated slot **(see illustration)**.
2 The plate is set during production and should not be disturbed unless a new flywheel, flywheel housing or other associated components have been fitted.
3 To adjust the timing plate, carry out the following operations.
4 Remove the plastic cover.
5 Using the crankshaft pulley nut, turn the crankshaft until the mark on the flywheel is at the start of the timing plate.
6 Remove the plug from behind the crankshaft pulley using an Allen key. Note that if the hole in the pulley is not over the plug, the crankshaft should be turned exactly half a turn. This is because there are two diametrically opposite timing marks on the flywheel, and the mark corresponding to TDC on No 2 and 3 cylinders must be used to bring the slot in the crankshaft counterbalance in line with the plug hole.
7 Insert the crankshaft locking tool (Peugeot special tool 80133) into the plug hole and turn the crankshaft until the tool is felt to drop into the cut-out in the counterbalance weight of the crankshaft.

TOOL TiP



A crankshaft locking tool can be made from a 100 mm length of 8.0 mm dowel rod.

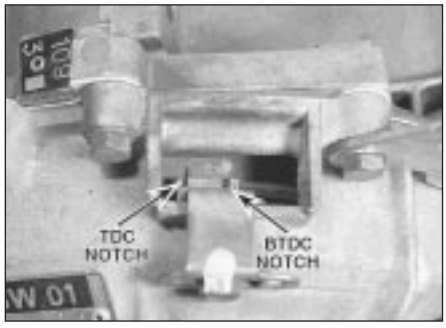
8 If the special tool is not available, a suitable alternative can be used **(see Tool Tip).**
9 With the tool or dowel rod inserted, pistons 2 and 3 are now located at TDC.
10 Release the timing plate bolt and move the plate to align the flywheel, and 0 (TDC) mark on the plate. Tighten the bolt to the specified torque. Apply a blob of paint on the edge of the bolt so that any subsequent movement can be recognised.
11 Withdraw the tool, fit a new sealing ring to the plug and tighten securely.

8 Ignition timing - checking and adjustment

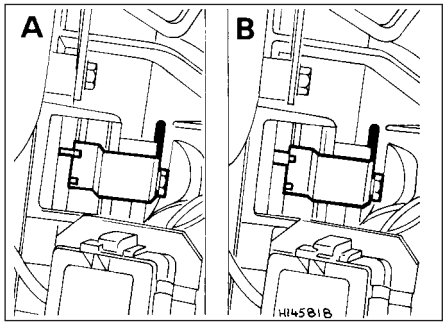
Note*: On engines equipped with MMFD Mono-point G5/6 or Motronic M1.3 engine management systems the ignition timing is controlled by the system ECU and cannot be adjusted.*

XV, XW and XY series engines

1 To set the ignition timing statically so that the engine can be started first remove No 2 spark plug and turn the engine in the normal rotational direction until pressure is felt - indicating that the piston is commencing the compression stroke. The pressure can be felt using a suitable wooden rod or a piece of cork placed over the spark plug hole.
2 Remove the plastic cover from the timing aperture then continue turning the crankshaft until the mark on the flywheel is opposite the BTDC mark on the timing plate **(see illustration)**.
3 Check that the distributor rotor arm is facing the No 2 HT lead segment position in the distributor cap. To do this, remove the cap and mark the outside in line with the segment, then put it back on the distributor noting which way the rotor arm is facing.
4 If necessary, loosen the mounting nuts and turn the distributor body to bring the segment and rotor arm in line, then tighten the nuts. Refit No 2 spark plug.
5 Run the engine to normal operating temperature then stop it and connect a tachometer and stroboscopic timing light as described in the instrument manufacturer's instructions. If the HT pick-up lead of the timing light is connected to the HT lead on the ignition coil it is possible to detect any discrepancy between the firing of Nos 1 and 4 and Nos 2 and 3 cylinders since there are two diametrically opposite timing marks on the flywheel. However, the pick-up lead may be connected to any one of the spark plug HT leads, in which case only one of the flywheel timing marks will be used.
6 Disconnect and plug the vacuum pipe at the distributor vacuum advance unit.
7 Run the engine at the specified speed and point the timing light into the timing aperture. The single mark on the flywheel should be aligned with the BTDC mark on the timing plate **(see illustration)**. If the ignition coil HT lead has been used (see paragraph 5), and there is wear in the distributor, there will be two marks visible on the flywheel close to each other. In this case the mid-point between the two marks should be aligned with the BTDC mark on the timing plate.
8 If adjustment is necessary, loosen the distributor mounting nuts and rotate the distributor body as required. Tighten the nuts on completion.
9 The operation of the centrifugal advance weights in the distributor can be checked by increasing the engine speed with the timing light pointing in the timing aperture and observing that the mark on the flywheel advances from its initial position.

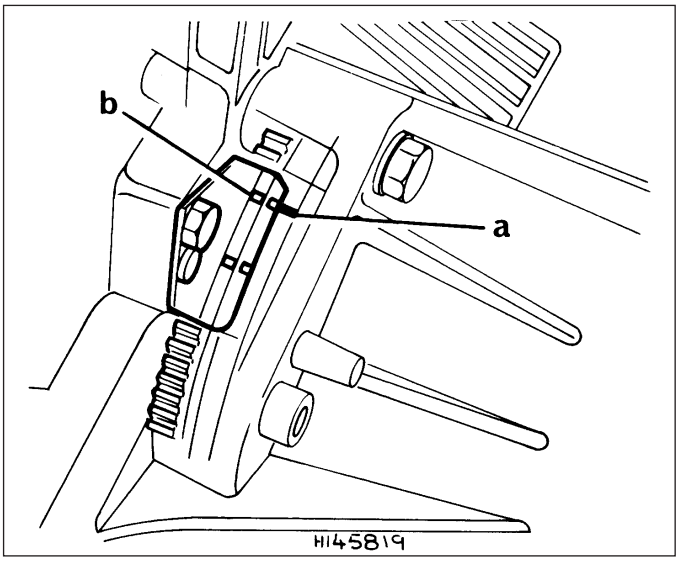


8.2 Timing plate marks on XV, XW and XY series engines



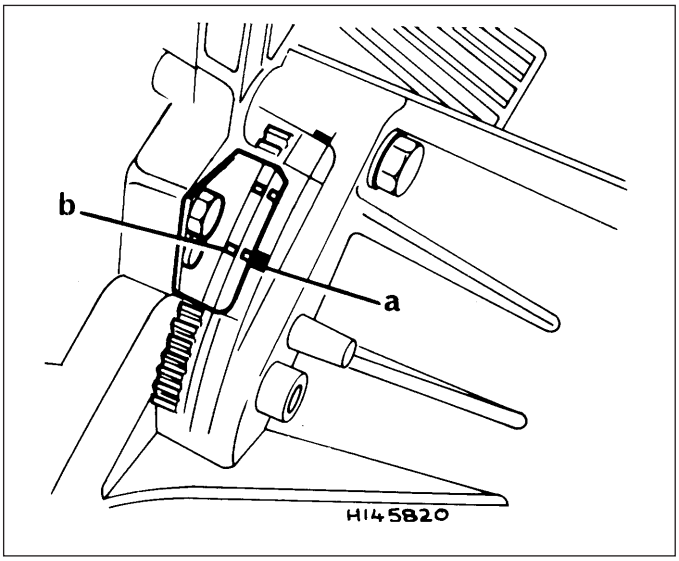
8.7 Ignition timing adjustment on XV, XW and XY series engines

A Using spark plug HT lead
B Using ignition coil HT lead



8.13 Initial static ignition timing on XU series engines

a Single flywheel mark *b BTDC mark on timing plate*



8.19 Dynamic ignition timing on XU series engines

a Double flywheel mark *b TDC mark on timing plate*

10 To check the vacuum advance unit, run the engine at a fast idle speed and reconnect the vacuum pipe. The flywheel mark should again advance.

11 Stop the engine, disconnect the tachometer and timing light and reconnect the vacuum pipe. Refit the timing aperture cover.

XU series engines

12 To set the ignition timing statically so that the engine can be started, first remove No 1 spark plug (nearest the flywheel) and turn the engine in the normal rotational direction until pressure is felt - indicating that the piston is commencing the compression stroke. The pressure can be felt using a suitable wooden rod or piece of cork placed over the spark plug hole.

13 While looking into the timing aperture in the clutch housing/transmission casing, continue turning the crankshaft until the single mark on the flywheel is opposite the BTDC mark on the timing plate **(see illustration)**.

14 Check that the distributor rotor arm is facing the No 1 HT lead segment position in the distributor cap. To do this, remove the cap and mark the outside in line with the segment, then put it back on the distributor noting which way the rotor arm is facing.

15 If necessary, loosen the mounting nuts and turn the distributor body to bring the segment and rotor arm in line, then tighten the nuts. Refit No 1 spark plug.

16 Run the engine to normal operating temperature then stop it and connect a tachometer to it.

17 Disconnect and plug the vacuum pipe at the distributor vacuum advance unit.

18 Disconnect and remove the air cleaner inlet duct then connect a stroboscopic timing light to the engine as described in the timing light manufacturer's instructions, and with the HT pick-up lead connected to No 1 spark plug HT lead.

19 On early models, run the engine at 3500 rpm and point the timing light into the timing aperture. The double mark on the flywheel should be aligned with the TDC mark on the timing plate; indicating that the ignition is advanced by 30° **(see illustration)**. On engines without double timing marks, refer to the *Specifications* for the relevant ignition timing setting and engine speed, then check that the single mark on the flywheel is aligned with the appropriate mark on the timing plate.

20 If adjustment is necessary, loosen the distributor mounting nuts and rotate the distributor body as required. Tighten the nuts on completion.

21 Check the centrifugal and vacuum advance characteristics of the distributor, as described in paragraphs 9 and 10.

22 Stop the engine, disconnect the tachometer and timing light then reconnect the vacuum pipe and air cleaner inlet duct.

TU series engines

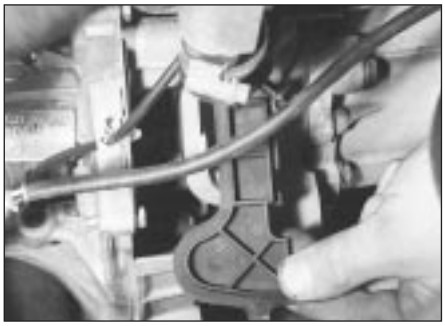
23 To set the ignition timing statically so that the engine can be started, refer to the procedures contained in paragraphs 12 to 15 above.

24 To check the ignition timing, a stroboscopic timing light will be required. It is also recommended that the flywheel timing mark is highlighted as follows.

25 Remove the plug from the aperture on the front of the transmission clutch housing. Using a socket and suitable extension bar on the crankshaft pulley bolt, slowly turn the engine over until the timing mark (a straight line) scribed on the edge of the flywheel appears in the aperture. Highlight the line with quick-drying white paint - typist's correction fluid is ideal **(see illustrations)**.

26 Start the engine, allow it to warm up to normal operating temperature, and then stop it.

27 Disconnect the vacuum hose from the distributor diaphragm, and plug the hose end.



8.25a On TU series engines, remove the plug from the transmission housing . . .

8.25b . . . to reveal the timing plate and flywheel timing mark (arrowed)

28 Connect the timing light to No 1 cylinder spark plug lead (No 1 cylinder is at the transmission end of the engine) as described in the timing light manufacturer's instructions.
29 Start the engine, allowing it to idle at the specified speed, and point the timing light at the transmission housing aperture. The flywheel timing mark should be aligned with the appropriate notch on the timing plate. The numbers on the plate indicate degrees Before Top Dead Centre (BTDC).
30 If adjustment is necessary, slacken the two distributor mounting nuts, then slowly rotate the distributor body as required until the flywheel mark and the timing plate notch are brought into alignment. Once the marks are correctly aligned, hold the distributor stationary and tighten its mounting nuts. Recheck that the timing marks are still correctly aligned and, if necessary, repeat the adjustment procedure.
31 When the timing is correctly set, increase the engine speed, and check that the flywheel mark advances to beyond the beginning of the timing plate reference marks, returning to the specified mark when the engine is allowed to idle. This shows that the centrifugal advance mechanism is functioning. Reconnect the vacuum hose to the distributor, and repeat the check. The rate of advance should significantly increase if the vacuum diaphragm is functioning correctly.
32 When the ignition timing is correct, stop the engine and disconnect the timing light.

9 **TDC sensor** - removal and refitting

Removal

1 Depending on engine type, the TDC sensor is for use with the diagnostic socket located on the clutch housing, or for the provision of information on crankshaft position to the engine management system ECU. When used in conjunction with the diagnostic socket, a special instrument and adapter are required and therefore it will normally be used only by a Peugeot garage.
2 To remove the sensor, unscrew the mounting screw or release the clamp as applicable.
3 Where the sensor forms part of the diagnostic socket assembly, if it is to be completely removed, the socket must be unclipped from its bracket and the remaining wiring and earth leads disconnected.

Refitting

4 Refitting is a reversal of removal, but the adjustment procedure for new and used sensors differs. New sensors have three extensions on the inner face and the unit should be inserted through the clamp until the extensions just touch the flywheel. The clamp screw is then tightened and clearance is provided as the flywheel rotates and wears the ends of the extensions. This method should not be used when refitting a used sensor. In this case, cut off the extensions completely then temporarily insert the sensor until it touches the flywheel, remove it and reposition it in the clamp 1.0 mm further out.