

123 *ignition.nl*

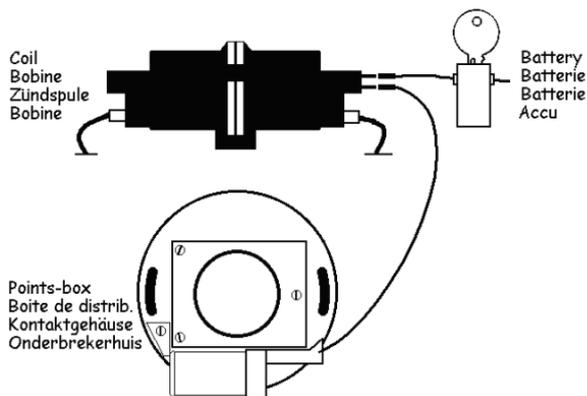
ignition systems for classic cars



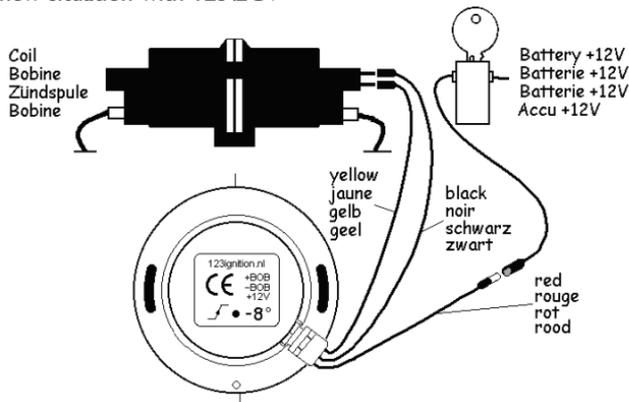
installation manual
123\2CV, 123\UNI & 123\EVO



old situation with points



new situation with 123\2CV



Installation Instructions

All "123ignition\2CV" modules are designed for the stock (black) 2CV-coil but are also compatible with high current (brown) VISA coils.

Previous models of the 123\2CV would get damaged by the VISA coil, so do not use a VISA coil with those!

STEP 1

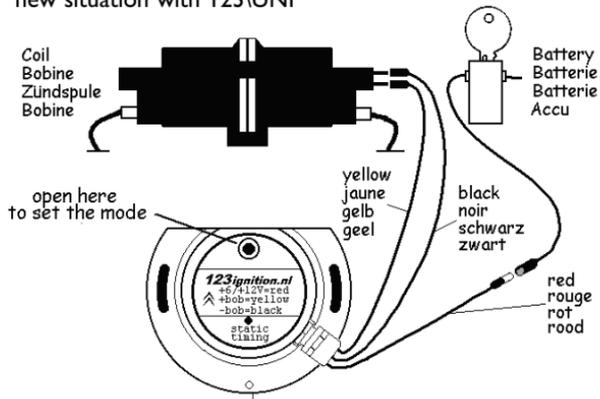
Turn the ignition off. Remove the engine fan use a long 14 mm socket or similar to unscrew the bolt holding it, once the bolt is removed, the fan comes loose by putting a rod or the socket in it and tapping sideways with a hammer whilst the other hand pulls the fan from the engine. Once the fan is removed unscrew the 5 lower screws (8 mm spanner) and lift the rubber shield to gain access to the points box.

Disconnect the wire from the points box and also from the coil. You do not have to remove this wire, it may be useful sometime in the future.

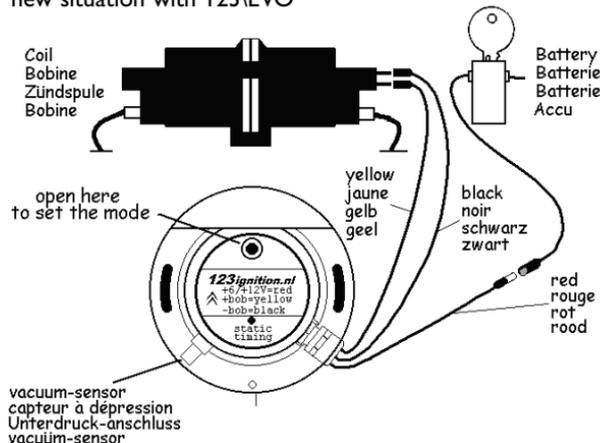
STEP 2

Remove the points box along with the capacitor. Set aside the two M7 bolts and square washers. Remove the metal protector plate to gain access to the centrifugal advance mechanism. With two very small screwdrivers you can bend away and remove the small circlip ring from the end of the camshaft so that you can remove the

new situation with 123UNI



new situation with 123EVO



thrust washer, the centrifugal weights and cam assembly. Put these parts in a ZipLock bag and store in a safe place.

STEP 3

Thoroughly clean the area, inspect the point where the camshaft comes out of the block. If the cavity is moist with an excessive amount of oil, you may have an engine problem.

After cleaning everything, slide the two magnets onto the 5mm spindles at the end of the camshaft. Install the 123ignition module with the two M7 bolts and square washers. Leave the bolts a little loose so that you can still rotate the ignition unit in the housing. Align the right side of the dimple at the bottom of the unit with the vertical seam of the crankcase halves, see drawing.

STEP 4

Run the three wires, (yellow, black and red) along the bottom of the fanshroud, and out through the rubber grommet in the front. It is a good idea to put the wires inside a protective sleeve (like a shrink tube without shrinking it) to give extra protection to the wires' insulation. Tuck the wires securely under the metal tabs inside the fan housing, and make sure they can not come into contact with the fan!

Cut the wires so that there is easily reach the coil and take into account that the engine moves.

Use the connectors supplied with the kit with a professional crimping tool, try to borrow one if you do not have one. Make sure all your electrical connections are absolutely **secure**, using a cheap crimping tool or ordinary pliers can cause a bad connections and a major problem in the future! Do not rush things, tidy up everything carefully. Use tie-wraps and take special care that the wires under no circumstances can touch the hot exhaust and balance pipe and that no sharp edges in the long run can damage the wires insulation. The wires may not be too close or tie-wrapped to the spark plug leads.

Now pull the second wire off the coil (i.e. the wire that connects the positive terminal on the battery, through the ignition key, to the positive terminal on the coil). Connect this wire to the red wire coming from the 123 ignition module.

DO NOT HOOK UP THE WIRES TO THE COIL YET!

123\EVO only:

As the 123\EVO offers a vacuum-advance sensor, a thick-wall rubber vacuum-hose may be connected to the inlet-manifold of the engine. (might you not want to use this feature, simple leave the nipple on the 123\EVO open) An easy way of making a



vacuum-connection is by drilling a 4-mm hole, and cutting M5-thread into the dual choke carburettor (see photo) because these are already prepared for a vacuum nipple. The nipple is supplied with the 123\EVO.

STEP 5

Insert the 6 mm timing rod (or a 6 mm drill bit) through the hole in the crankcase. Screw the fanbolt into the crankshaft, and with a wrench on the fanbolt turn the engine over slowly (removing the spark plugs makes this easy) until the rod slides into the hole in the flywheel. If there is a little play, because your rod is slightly smaller than 6 mm (a 5,5 mm drill is sometimes more convenient) try to find the center of the play. Your engine is now set on its static timing point, at 8 or 12 degrees before TDC (Top Dead Center) depending on engine type.

Clean one of the teeth of the flywheel, and a small area opposite on the bellhousing. The area next to the starter motor works well. Accurately paint a timing mark with a bottle of whiteout (Tipp-Ex).

STEP 6

Turn the ignition on. Make sure the engine is set at its static timing point. Turn the "123ignition\2CV" housing counter-clockwise until the LED goes out. Turn it clockwise VERY slowly until the LED just comes on again. Tighten the two M7 bolts.

REMOVE THE TIMING ROD OR DRILL BIT!

STEP 7

Check your timing as follows: Put the wrench on the fan bolt and turn the engine over (clockwise!) and slow down when the timing marks are approaching each other. The LED should light up at the exact moment when the timing marks are aligned. If this is not the case, repeat step 6.

STEP 8

Turn the ignition off. Connect the yellow wire to the positive terminal on the coil and the black wire to the negative terminal on the coil. Put the sparkplugs in. If you own or can borrow a stroboscope timing light, now is a good time to use it. Start the engine and see if the painted marks align between 900-1100 rpm, if not adjust the 123 until they do. If you do not have a stroboscope you can do this check as soon as you come to a workshop where there is one.

123UNI or 123EVO only:

Choose the right standard curve for your engine (see table) and select it with the curve selection switch. To access this switch, you must first remove the hexagonal plug with a 5mm Allen key in the front of the 123ignition unit. You can now carefully turn the



curve selector 'O' to 'F'
sel. de courbe d'avance 'O' à 'F'
Kurve-schalter 'O' bis 'F'
Curve-schakelaar 'O' tot 'F'

switch with a small screwdriver.. If you can't see the switch position turn the switch clockwise and count the clicks until you arrive at the required curve. The fact that, when the engine is running, the LED flashes in MODE "0" only, may come in handy if you've lost count.

STEP 9

Re-install the rubber shield, take away the fan bolt, put a little grease on the crankshaft to prevent the fan from sticking to the axle. Put the V-belt on the fanpulley and the fan back on the axle without the bolt and turn the fan around on the axle and double-check to make sure the fan does not touch the wires! If you have some lock-tite you can put it on the thread of the fanbolt as extra security. Put in the fanbolt and tighten it firmly to 36 lb/ft or 50 N/m.

Fire it up and enjoy!

I23\UNI mode switch settings

| mode | engine plate | engine-type | static timing |
|------|--|-------------|---------------|
| 0 | timing mode, 20°/3100 rpm only for calibration | | |
| 1 | A | 9 hp, 375cc | 12° |
| 2 | AZ | A53 | 12° |
| 3 | AM | M4 | 12° |
| 4 | AYA | A79/0 | 12° |
| 5 | AM2 | M28 | 8° |
| 6 | AYA2 | A79/1 | 12° |
| 7 | AK2 | M28/1 | 8° |
| 8 | A06/635 | M28/1 | 8° |
| 9 | A06/642 | M28/1 | 8° |
| A | AM2A | M28/1 | 8° |
| B | A06/664 | M28/1 | 8° |
| C | - | - | - |
| D | - | - | - |
| E | - | - | - |
| F | ”LPG/E85”*) | M28/1 | 8° static |

*) This mode is ment for M28/1-engines running on ultra high octane fuels like LPG or E85.



E85 is a blend of 85% bio-ethanol and 15% gasoline. Its octane rating is 104 RON. You need a larger main jet or a ”I23\FlexiJet” adjustable jet to run on E85 (see photo).

I23\EVO mode switch settings

| mode | adv/rpm*) | curve-type |
|------|------------|---|
| 0 | 20°/3100 | only for calibration, temp. sensor inactive |
| 1 | 20°/3100 | tuning with regular fuel |
| 2 | 22°/3100 | tuning with regular fuel |
| 3 | 24°/3100 | tuning with regular fuel |
| 4 | 26°/3100 | tuning with regular fuel |
| 5 | 28°/3100 | tuning with regular fuel |
| 6 | 14°/3600 | curve ‘A’ for 375cc, A53 & M4 |
| 7 | 20°/3000 | curve ‘B’ for A79/0 engine |
| 8 | 25°/3000 | curve ‘C’ for A79/1, M28 & M28/1 |
| 9 | 23°/5000 | VA1-curve for V06/630 (VISA/LNA) |
| A | 20,5°/5200 | VA4-curve for V06/644 (VISA/LNA) |
| B | 24°/3100 | tuning with E85 / LPG |
| C | 26°/3100 | tuning with E85 / LPG |
| D | 28°/3100 | tuning with E85 / LPG |
| E | 30°/3100 | tuning with E85 / LPG |
| F | 32°/3100 | tuning with E85 / LPG |

*) excl. max 12° vacuum advance

Static timing:

8° for M28 & M28/1,

10° for VISA engines

12° for A53, M4, A79/0, A79/1

ADVANCED USE:

TUNING WITH THE 123\EVO.

Caution, this is for advanced users only, most people should stick to the standard curves. The standard curves have the extra margins that Citroën used to prevent engine damage under extreme situations. If you are an experienced 2cv mechanic and know what you are doing you can use these margins and tune your car for maximum power and fuel efficiency.

The procedure is as follows :

- a. Select curve 1, presumed you tune a car on regular fuel. (For LPG/E85 you should start with curve "B")*
- b. Drive it, until the engine is warm, and measure maximum speed at full throttle.*
- c. Select curve 2 (or "C"), and measure maximum speed at full throttle again. Listen for any evidence of knocking. Release the throttle when you hear this because this is the easiest way to ruin your engine.*

If the maximum speed increases and there is no sign of knocking, select the next curve. If the maximum speed does not increase or any knocking occurred, return to the previous curve.

Be aware, that using the quality of fuel can vary a great deal. Inferior fuel quality or higher ambient temperatures than during the tuning process, may cause knocking. Release the throttle when you hear this! Choose a lower curve setting as soon as possible.

FINAL WORDS

Coils

Coils that have been overheated once when the car still had points will never give a strong spark anymore, even if they still work they need to be replaced, get a **new** coil, another second hand coil can be just as bad. Using a VISA-coil, results in much higher currents than with the stock black coil. Check for power loss over the ignition-key, and check (**very important!!**) the quality of the mass-cable from the gearbox to the battery.

Spark plug leads

Spark plug leads have to be replaced once in a while even if they still seem ok they often start to leak spark energy, especially when they are wet. With the higher spark energy of a 123 it is even more important to have fresh spark plug leads, now is a good time to replace them! If you are uncertain if they still are ok you can test their isolation by slowly pouring water over them, it should not affect how the engine runs!

Maintenance

You can now congratulate yourself to have an ultramodern, maintenance free ignition system, which may seem to make your car almost totally maintenance free itself. Of course this is not the case and it will still need its plug-gaps checked every 5000 kms and new plugs every 10.000 kms. Also other regular maintenance, like oil

changes, valve clearance checking, cleaning the oil cooler etc is still necessary to keep your car in good shape so don't neglect that just because it otherwise has become so much more reliable with the 123ignition!

Raids and Waterproofing

The 123 is not absolutely waterproof and getting water into the system can irreversibly destroy it! Under normal circumstances this is never a problem but take care when using high pressure cleaners (these can ruin the oil cooler as well) and when crossing deep water. It is possible to make the unit more "Raid ready" with a silicone sealant around the circuit boards edges on the rear of the unit, the LED in front and where the wires come out of the unit.

Technical data

operating voltage: 4 – 18 Volt
range: 10 – 10000 rpm
temperature: -40° to 100° Celsius
coil: stock black 2CV-coil, brown VISA coil or other coil with a primary resistance not lower than 1 ohm
dwell: microprocessor controlled, adjusting to coil current and therefore independent of battery voltage
spark-balance: software controlled, better

wiring:

then half a degree crankshaft
red = +12V
yellow = "+” coil
black = "-” coil

engine-types:

"123\2CV"

A79/1 435cc
M28 & M28/1 602cc

"123\UNI"

all standard "2CV" - engines, selectable by mode-switch

"123\EVO"

all standard and tuned "2CV" engines, selectable by mode-switch.
Cold start advance and overheat retard.
Vacuum advance sensor for reduced fuel consumption under medium loads.



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