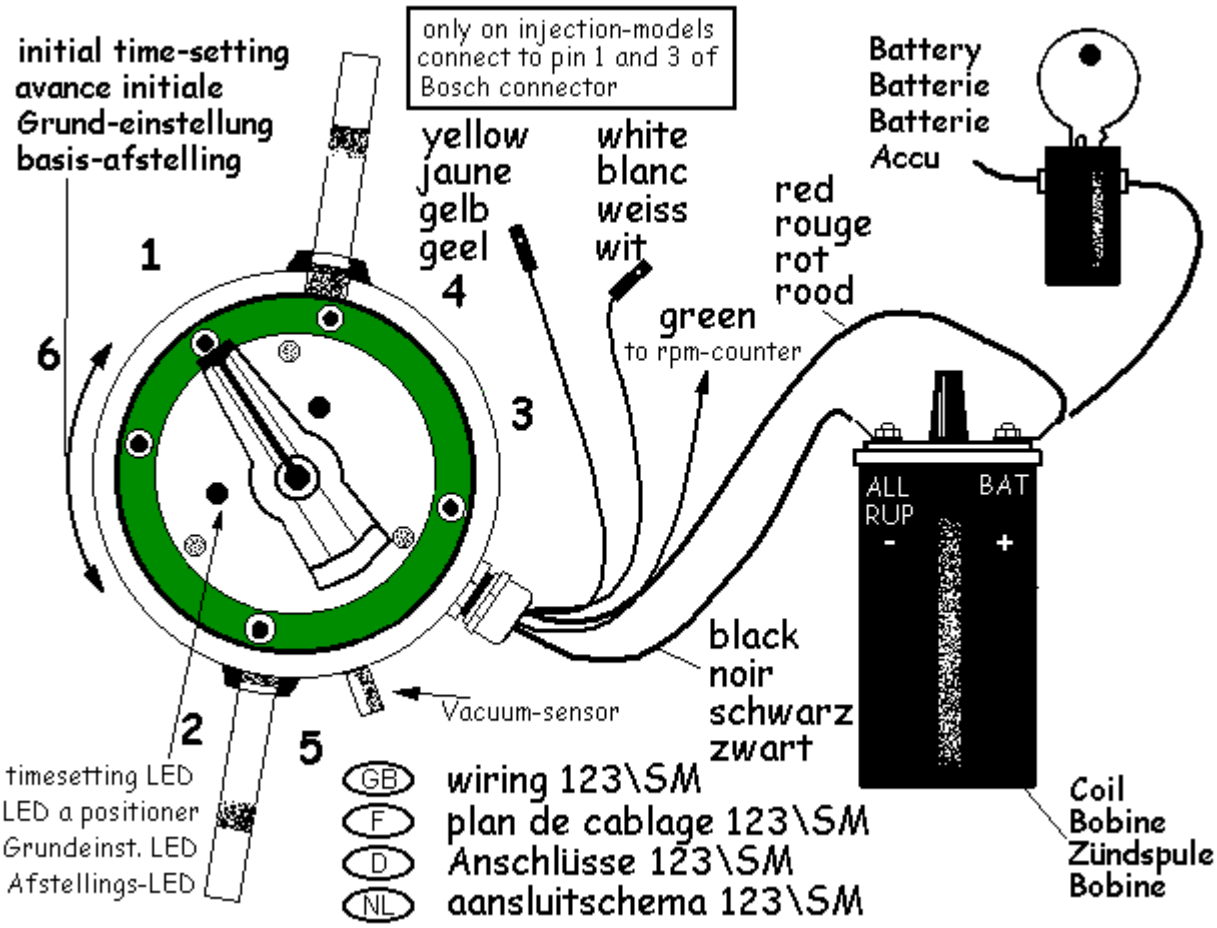
Mounting instructions for the 123\SM

type : **123\SM**
for : all Citroen-SM's , Maserati-Merak & Merak SS



STEP 1: Find the static timing point

On the old distributor, note the position of the ignition wire to the number one cylinder. Remove the distributor cap and turn the engine so that one of the rotor tips points to the number one cylinder position. Now carefully turn the engine further in the usual direction, until the 'PMH'-indication can be seen through the hole in the bell-housing. (PMH = TDC = top dead center)

It is important here that **both** conditions are met at the same time: The PMH marking must show through the bellhouse hole, **and** one of the rotor tips must face the post which goes to cylinder number one Then, and **only then**, the engine is at the static timing point, at the end of the compression stroke for the number one cylinder. It is important to be careful here, so look twice.

STEP 2: Out with the old, in with the new

You may wish to verify that the correct advance curve has been selected in your '123\SM' : using a 5mm Allen wrench remove the hexagonal plug in the bottom face of the 123-housing.

Inside the hole you'll find a 16 pos. rotary switch ('0'-'F').

Check the technical data for the proper setting. Only the first 4 positions ('0' '1' '2' & '3') are used.

curve selector '0' to 'F'
sel. de courbe d'avance '0' à 'F'
Kurve-schalter '0' bis 'F'
Curve-schakelaar '0' tot 'F'

Select the curve of your choice; re-insert the plug and tighten securely.
Now remove the spark plug wires and coil wire from the old distributor cap and remove the old cap. Disconnect the points wires from the coils. Also disconnect the wire that runs from one of the coils to the rpm-counter.Unscrew the hold down nut at the base of the distributor and pull the old unit out.

Now remove the distributorcap from the '123\SM'. Use some motor-oil to lubricate the drivegear of the ignition,and carefully insert the 123-unit in the engine, positioning the rotor in such a way that the cables come out conveniently, AND that the rotor points roughly to the cylinder number 1 output, on the NEW distributor-cap.

Remove the two old coils, and mount a High-Energy coil. The primary resistance of such a coil should be between 1,5 and 1,0 ohms.

STEP 3: Static timing the '123'

Connect the red wire to the BAT-terminal of the High Energy-coil, according to the schematic.
For now, do NOT connect the black wire. Turn on the ignition.
Slowly turn the housing of the '123' clockwise, until the green LED just lights up. The green LED shines through one of the three holes in the aluminium disc below the rotor.
With the '123' in this position, tighten the hold down nut securely, as it is also the electrical ground of the 123\SM. Turn off the ignition.

STEP 4: Finish the wiring

Connect the black wire to the RUP-terminal of the coil,according to the schematic.
For injection models : connect the yellow and white cable to pin 1 & 3 (or 3 & 1) of the Bosch-connector, leaving the middle contact unconnected.
Connect the green cable to the unmodified rpm-counter of your SM ; make sure that no other circuits are connected to this rpm-counter. (the fuel-pump-relay for instance)
Note that the reading of the rpm-counter may not be 100% accurate.

Connect the spark plug leads to the cap, starting with the wire for the number one cylinder at the position pointed to by the rotor of the '123'.
Turning counter-clockwise, the cables should be attached in firing order: 1-6-2-5-3-4.
Also connect the high voltage wire from the coil to the center position of the cap.

Attach the cap to the distributor.
Keep the all wires well away from the high voltage leads and away from moving parts, using tie-wraps or other suitable means. Connect the vacuum-tube to the ignition, if you have an SM-automatic or an injection-model.

STEP 5: Start and test drive

You can now start your engine. If you have worked accurately, your ignition should be adjusted well enough to take a test drive.

To achieve ultimate accuracy a fine adjustment using a stroboscope should be performed. Check the values for dynamic timing in the table below. Remove the vacuum tube whilst fine-tuning. Enjoy your 123ignition!

TIPS

Do **not** disconnect **ANY** electric wire, when the engine is running. This is bad practice when using high-tech electronic systems, such as the 123ignition.

Make sure that grounding of the unit is of good quality. Use the M5-threaded hole in the bottom of the 123\SM to make a connection to the 'minus' of the battery.

Resistor-core silicone ignition-leads are the better choice!

In case you want to order a spare cap and/or rotor, here is ordering info :

Bosch cap : Bosch item number 1.235.522.210 or 1.235.522.302
Bosch rotor : Bosch item number 1.234.332.177

Technical data

Operating voltage	8,0 to 15,0 Volts
range	600 to 7000 rpm
temperature	-30 to 85 degrees Celsius
coil	one "High Energy" coil, primary resistance **not** below 1 ohm.
engine-models	123\SM can be set to fit all Citroen SM- & Merak-engines

curve	engine	dynamic timing	static-setting
0 = 'SU1'	2,7 ltr. USA de-polluted	27 degr. at 2000rpm	TDC
1 = 'SO1'	2,7 ltr. European all types	29 degr. at 2000rpm	TDC
2 = 'SO2'	3,0 ltr. European all types (also for Merak & Merak SS)	26 degr. at 2000rpm	TDC
	3,0 ltr. USA de-polluted	22 degr. at 2000rpm	- 4
3 = 'SI-1'	2,7 ltr. Injection	22 degr. at 2000rpm	TDC

direction	anti-clockwise
dwell	microprocessor controlled, depending on coil current
current-timeout	after +/- 1 second. If the engine is not running, the current is switched off to prevent overheating of the coil
spark balance	software controlled, better then half a degree crankshaft
wiring	red = +12 Volt black = '-' of the coil white = output to Bosch-Jetronic (pin1) yellow = output to Bosch-Jetronic (pin3) green = to original 'SM' rpm-counter
vacuum retard	only active on curve number 2 and 3 active between 600 and 3200 rpm. max. 8 degrees retard @ 160 mmHg.

IMPORTANT

The '123' was designed especially for the Citroen-SM. Because the distributor-caps, rotors and injection-contacts are no longer available, the 123\SM uses caps and rotors that are still in use in today's cars. Notice that the distributor-cap of the 123\SM wrongly indicates cylinder number 6 (should be number 4) and number 4 (should be number 6).
Starting at cylinder number 1, the firing order is : 1-6-2-5-3-4.