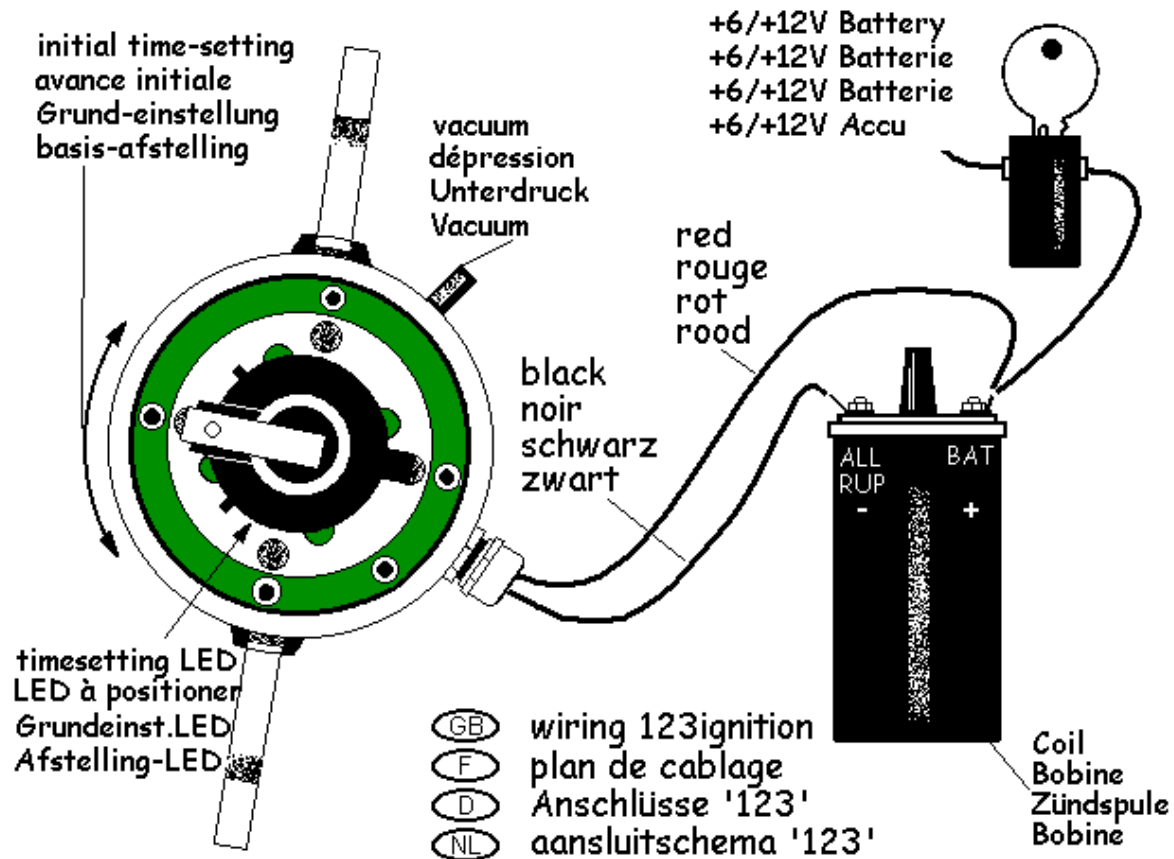


## Mounting instructions for the '123ignition'

type : 123\GB-4-R-V  
for : most English 4 cylinder engines, 6 & 12 Volt, negative earth **only** !



### IMPORTANT

Please read the entire instructions before you begin installation. If after reading you are unsure of the procedure to be followed, please ask someone knowledgeable in engine tuning. Remember to work safely.

### 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 in its normal direction so that the rotor almost points to the number one cylinder position. Now carefully turn the engine further until the Top Dead Center ( TDC ) is indicated on the timing mark. The engine is now at the **static timing point**, at the end of the compression stroke for the number one cylinder. If you do know the engine firing order, this is an ideal time to trace the ignition wires and make some notes.

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

You should verify that the correct advance curve for your engine has been selected in your '123' : using a 5mm Allen wrench remove the hexagonal plug in the bottom face of the housing. Inside the hole you will find a 16 position rotary switch. ( marked '0' to 'F' )



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

Check the technical data below for the proper setting. Select the curve of your choice, then 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 wire from the coil. Loosen the clamp at the base of the distributor and pull the old unit out.

Now remove the distributor-cap from the '123' and carefully insert it in the block, turning the rotor until the drive dog mates and the unit slips into place. Rotate the housing of the '123' so that the cables come out conveniently.

If necessary, the drive dog can be repositioned on the shaft to accommodate a different rotational position. To do this, remove the '123' and carefully remove the retaining spring from the drive dog, then use a small punch to tap out the pin and re-assemble at an angle more suitable to your needs.

## **STEP 3: Static timing the '123'**

Connect the red wire to the BAT (positive) terminal of the ignition coil, according to the schematic. For now, do NOT connect the black wire. Turn on the ignition. Slowly turn the housing of the '123' in a clockwise direction until the green LED just lights up.

The LED shines through one of the four holes in the aluminum disc below the rotor. While turning, also press the rotor in a clockwise direction, to remove any free play in the drive. Finally, tighten the '123' securely, as it is also the electrical ground of the '123'. Turn off the ignition.

## **STEP 4: Finish the wiring**

Connect the black wire to the negative terminal of the ignition coil, according to the schematic.

Connect the spark plug leads in the proper sequence to the cap, starting with the wire for the number one cylinder at the position pointed to by the rotor of the '123'.

Also connect the high voltage wire from the coil to the center position of the cap. Attach the cap to the distributor. Route the red and black wire well away from the high voltage leads and away from moving parts, using tie-wraps or other suitable means. Connect the vacuum-tube from the carburetor to the vacuum port on the '123'. Older engines may have a screw-connection for the vacuum-advance diaphragm. In this case you can use a short length of rubber hose to connect to the 123, or remove the hard line to the carburetor and replace it completely with rubber vacuum-hose.

## **STEP 5: Start and test drive**

You can now start your engine. If you have worked accurately, your ignition should be adjusted well enough for a test drive. To achieve ultimate accuracy a fine adjustment using a stroboscope should be performed. ( check the dynamic timing data in 'technical data' )  
Disconnect 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.
- Sparks are much stronger with a 123ignition : use good quality sparkplug leads, and a good quality coil. The primary resistance should **not** be lower than 1 ohm !
- Resistor-core silicone ignition-leads are the better choice! Do not use solid core wire, these send out quite a lot of electromagnetic noise that interfere with electronic devices.
- Mistrust old coils : they all look alike, but you can't see if they have been overheated many times! Buy a new one, now you know that this will not be overheated anymore...
- Fresh spark plugs to go with the new coil and wires will ensure optimum ignition performance.
- Replace the cap and rotor every 30.000 km. Here is ordering information :

Bosch cap ref. nrs. : 1.235.522.050 / 1.235.522.058 / 1.235.522.059 / 1.235.522.145

Bosch rotor ref. nr. : 1.234.332.024

## **TUNING**

In the table presented below, you can see that the 16 curves are divided in four groups of four curves. Each group has a different maximum advance ( 27, 30, 33 & 36 degrees), and the 4 curves within each group have different rates of advance.

Assume you want to tune your engine, and you know the maximum advance for this engine is 30 degrees. The first curve you should choose is curve '4', and if that works well, step to curve '5' for improved throttle response.

If curve '5' is an improvement, you may try curve '6', but listen carefully for evidence of knock under heavy load. If curve 6 is an improvement, select curve 7 and again listen carefully for evidence of knock under heavy load. If knock is detected, step back to the last curve. Engines run under sustained knock conditions can be severely damaged!

If you have any doubt about tuning, please seek advice from a knowledgeable engine tuner.

## Technical data

Operating voltage	4,0 to 15,0 Volts, negative earth only
RPM range	TDC until 500 rpm, 500-4500 as defined below, fixed until 7000 rpm
Temperature	-30 to 85 degrees Celsius
Coil engines	stock coil <b>or</b> "High Energy"-coil, primary resistance <b>not below 1 ohm.</b> most English engines ( hence 123\GB ); advance-curves selectable by a switch through the bottom of the housing

Curve (switch setting)	degr. advance @500-1000 rpm*	degr.advance @ 2000 rpm*	max.degrees advance@rpm*
0	10,0	15,0	27,0@4200
1	10,0	16,5	27,0@3600
2	10,0	19,0	27,0@3000
3	10,0	21,0	27,0@2400
4	10,0	16,0	30,0@4500
5	10,0	18,0	30,0@4500
6	10,0	20,0	30,0@4500
7	10,0	22,0	30,0@4500
8	10,0	17,0	33,0@4500
9	10,0	19,0	33,0@4500
A	10,0	21,0	33,0@4500
B	10,0	23,0	33,0@4500
C	10,0	17,5	36,0@4500
D	10,0	20,0	36,0@4500
E	10,0	22,0	36,0@4500
F	10,0	24,0	36,0@4500

\* degrees advance and engine speed both relate to the crankshaft

vacuum-advance	curves 0-7 : starts at 4,5 inchHg, reaches 10 degrees* at 12 inchHg curves 8-B : starts at 4,5 inchHg, reaches 12 degrees* at 12 inchHg curves C-F : starts at 4,5 inchHg, reaches 14 degrees* at 12 inchHg
gearshift retard dwell	vacuum-advance drops to 0 degrees*, when vacuum is above 18 inchHg 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  
wiring

software controlled, better than half a degree crankshaft  
red = +6 or +12 Volt  
black = 'minus' of the coil