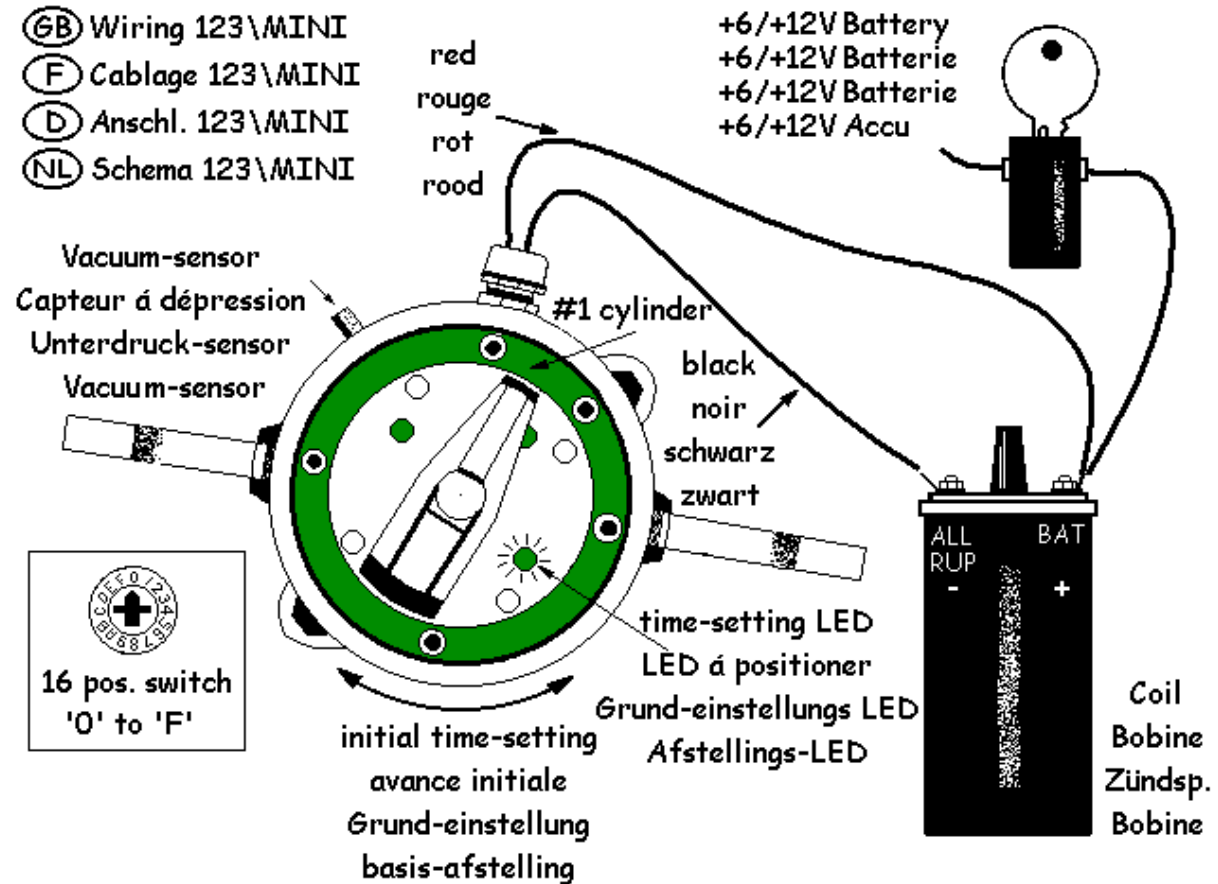


Mounting instructions for the '123ignition'

type : 123\MINI-R-V
 for : all "pre-A-plus" engines, for all 6 & 12 Volt cars, 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 who knows or visit www.TDCperformance.ca for additional information. 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. Number one is beside the radiator and the firing order is 1-3-4-2. Remove the distributor cap and turn the engine in its normal direction so that the rotor almost points to the number one cylinder position, ie the 2 o'clock position.

Now carefully turn the engine further until the Top Dead Center (TDC) is indicated on the timing mark on the flywheel. The engine is now at the **static timing point**, at the end of the compression stroke for the number one cylinder.

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' : using a 5mm Allen wrench remove the hexagonal plug in the bottom face of the housing. Inside the hole you'll find a 16 position rotary switch. (marked '0' to 'F') Check the technical data below for the proper setting. 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 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 the '123' 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, usually with the vacuum port pointing towards number three cylinder.

If necessary, the drive gear 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 gear, 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', usually the 2 o'clock position. The firing order is 1-3-4-2 and rotation is counter clockwise.

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'.

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 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 coil. The primary resistance should **not** be lower then 1 ohm ! Mini engines do not need such coils to operate properly.
- 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 info :

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 (28, 30, 32 & 34 degrees), and the 4 curves within each group have different rates of advance up to 2000 rpm.

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, or visit www.TDCperformance.ca for further information.

Technical data

Operating voltage	4,0 to 15,0 Volts, negative earth only
RPM range	600 to 7000 rpm
Temperature	-30 to 85 degrees Celsius
Coil engines	stock coil or "High Energy"-coil, primary resistance not below 1 ohm. all MINI 'pre-A-plus' engines ; advance-curves selectable by a switch through the bottom of the housing

Curve (switch setting)	Advance 500-1000 rpm*	Advance @ 2000 rpm*	maximum @ 5000 rpm*
0	10,0	14,5	28
1	10,0	16,7	28
2	10,0	18,4	28
3	10,0	20,2	28
4	10,0	16,3	30
5	10,0	17,6	30
6	10,0	19,4	30
7	10,0	21,1	30
8	10,0	16,2	32
9	10,0	18,1	32
A	10,0	20,3	32
B	10,0	22,9	32
C	10,0	17,0	34
D	10,0	20,4	34
E	10,0	22,1	34
F	10,0	23,9	34

* degrees advance and engine speed both relate to the crankshaft

vacuum-advance	0 to 14 degrees from 5 to 10 inch Hg
dwll	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

LUCAS Service number	123/Mini curve number	Application and/or Engine Number
40767	C	848 Mini UK Vehicles Regular Fuel
40768	F	850 Mini
40774	3	997 Mini Cooper HC
40819	C	Mini Cooper S Mk III, 1275 cc
40873	F	997 Mini Cooper LC
40899	C	Minor, Van and Pickup, 1098 mini Low Compression
40931	4	Mini early including Wolseley Hornet and Riley Elf
40941	F	850 mini Late Model High Compression
40955	F*	998 Mini Cooper High Compression
40958	F*	998 Mini Cooper LC and special order for low grade fuel
40979	B	Works special for Rally Mini's
41007	C	848 Mini UK Vehicles Regular Fuel
41026	E	848 Mini UK Vehicles Premium Fuel
41030	0	Mini 1000 Saloon, clubman and Estate, 998 cc,
41031	F*	998 Mini Cooper LC
41032	F*	998 Mini Cooper HC, 1971-75 Morris Marina 1.8 TC
41033	E	Mini Cooper S Mk III, 1275 cc
41045	A	998 mini Early Model High Compression
41057	B	998 mini Late Model High Compression
41134	A	850 and 998 Mini Automatic including Riley Elf and Wolseley Hornet, 1100 automatic
41212	B	Mini 1000 and Mini Clubman, Saloon and variants, 998 cc,
41214	2	1275 non S Mini, Austin 1300 HC and automatic, Riley Kestrel 1000, Wolseley 1300 and Vanden Plas Princess 1300, MG 1300 Automatic
41242	A	850 and 998 Mini automatic, Vandel Plas Princess 1300 and Wolseley 1300 twin carb
41246	B	Mini 1000 and Mini Clubman, Saloon and variants, 998 cc, 1972-74: Mini Clubman 1100, 1098 cc, Allegro 1100
41249	F	Later Minis and Moke
41250	C	Mini Moke, van and pickup, later models
41251	A	850 and 998 Mini Automatic including Wolseley Hornet and Riley Elf
41254	5	998 Mini 72 to 74 including Wolseley Hornet and Riley Elf
41255	D	998 Mini Cooper, late
41257	2	1275 non S Mini, Austin 1300 HC and automatic late
41404	0	998 Mini (Canada) 1975-80, 1974 onward Leyland (SA) 1.3 van, 1974-77 Morris Marina 1.3, 1975-78 Morris 1.3 HC
41410	4	1970-73 Austin 850 LC, 998 Mini automatic, 850 van and pickup, 1976-78 Morris Marina 1.8 GT and HL
41411	B	Mini 850 Saloon and variants, 848 cc
41412	5	Austin 1000 Mini automatic and Clubman, 1975 Authi Mini 1000
41417	A	1969 Austin 850 Mini automatic, 1976-80 Austin 850 Mini, 1970-80 Austin 1000 Mini automatic, 1976-80 Austin 850 van and pickup, 1970-77 Austin 1100 Automatic,
41418	8	Mini 1000 and Mini Clubman, Saloon and variants, 998 cc, manual and auto, Allegro 1.1
41419	0	1970-80 1275 non S Mini, 1973-79 Austin Allegro 1300 HC, 1969-74 Austin 1300 HC Automatic, 1970-74 Austin 1300 France, 1969-73 Austin 1300 Princess including automatic
41532	C	998 Mini (Canada)
41569	F*	Mini 850 Saloon and variants, 848 cc
41570	5	850 Mini, van and pickup
41858	B	Minis with engine number 12HC18AA, 12HC19(AA), 12HD20(AA) 12HE41, 12HE42, 1984 onward Austin Metro 1.3 van, 1981 onward Morris 440, 575 Van and Pickup 1.3
41882	4	Metro 998, Minis with engine number 99Hxx, 1988- onwards.
41938	D	Minis with engine number 12HC09AA, 12HC10AA, 12HD14(AA) 12HD15(AA), 1983-84 Austin Metro 1.3 HLE
42535	2	Minis with engine number 12A2BG01, 12A2BG03, 12A2BG05.
42626	4	Minis with engine number 12HD09, 12HD10, 12HD11, 12HD12, 12HD13, 12HD21, 12HD22, 1984-86 Austin 1.3 L and HLE
42627	4	Minis with engine number 12HD17, 12HD24, 1986 onward 1.3 Vanden Plas, 1984 onward MG Metro
42628	7	Minis with engine number 12HD26(AA) 1984 onward MG Metro turbo
42630	A	Minis with engine number 12HC17AA, 12HD18
42635	4	Minis with engine number 12HD25
42681	6	Minis with engine number 12HE48, 12HE25

* These engines require more maximum advance than the 123/Mini can provide, but curve F should allow the engine to operate well.