

KMS

IA23 Wiring

Part nr: 01-01-02-0003



Kronenburg Management Systems

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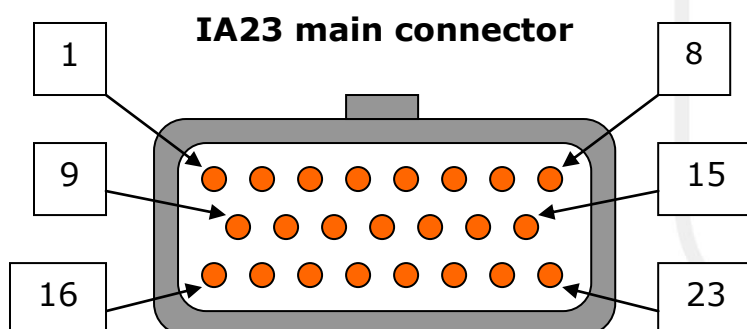
This document contains detailed information on how to connect the KMS IA23 ECU for multiple applications. Additional information, user manuals and software can be found on our website: <http://kms.vankronenburg.nl> or on the software CD included with the ECU.

1 Pin output

The main connector of the IA23 consists out of 23 pins. Each pin has its own function which can be seen in the overview below including wire colours and thickness.

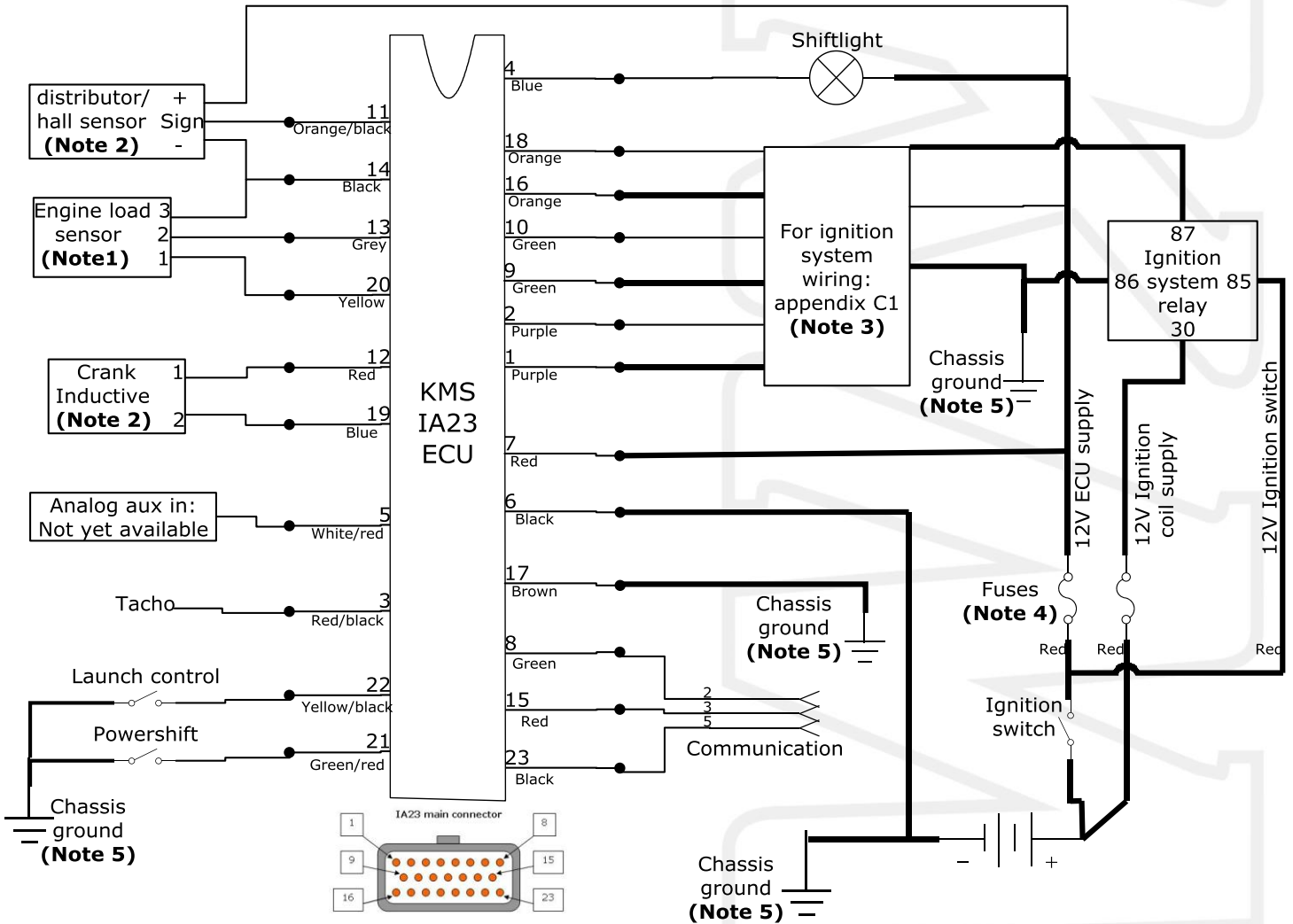
Pin nr.	Colour	Wire thickness	Function
1	purple	0,75mm ²	Ignition output 3 (amplified)
2	purple	0,5mm ²	Ignition output 3
3	red/black	0,5mm ²	Tacho output
4	blue	0,5mm ²	Shiftlight
5	white/red	0,5mm ²	Analog aux input
6	black	0,75mm ²	ECU ground
7	red	0,75mm ²	12V ECU supply
8	green	0,5mm ²	Communication
9	green	0,75mm ²	Ignition output 2 (amplified)
10	green	0,5mm ²	Ignition output 2
11	orange/black	0,5mm ²	Crank sensor signal hall
12	red	0,5mm ² (shielded)	Crank-sensor signal inductive
13	grey	0,5mm ²	Load signal
14	black	0,5mm ²	Load signal ground
15	red	0,5mm ²	Communication
16	orange	0,75mm ²	Ignition output 1 (amplified)
17	brown	0,75mm ²	Ground ignition drivers
18	orange	0,5mm ²	Ignition output 1
19	blue	0,5mm ²	Crank sensor ground
20	yellow	0,5mm ²	5V Load sensor supply
21	green/red	0,5mm ²	Powershift
22	yellow/black	0,5mm ²	Launch control
23	black	0,5mm ²	Communication

The pin numbers can be read on the back of the main connector of the IA23. These numbers can also be seen in the following drawing, seen from the back of the main connector or front of the IA23 ECU.



2 Main wiring

Below a wiring diagram is shown on how to connect the IA23 ECU to different sensors and actuators. This is a universal diagram which can be used for any type of engine, except for the connection of the ignition system. The ignition system is described in appendix C1 for different types of engines and applications. Wire colours are mentioned for each pin of the IA23 ECU and can also be seen on page 3, together with the wire thickness.



Note 1: The IA23 ECU has the possibility to use the Throttle Position Sensor **OR** MAP sensor as an engine load sensor.

Note 2: The IA23 ECU also has the possibility to use either an inductive sensor at the crank, an inductive sensor at the distributor **OR** a hall effect sensor at the distributor to determine RPM and crank position. Selecting the applied sensor in the software can be done under 'Options (F4)' → 'RPM pickup' → 'Crank type'.

Note 3: For wiring of the ignition system, 3 amplified (with internal ignition drivers for direct use on none amplified coils) and 3 none amplified (without internal ignition drivers for direct use on amplified coils) ignition outputs can be used. Connection/wiring of these outputs can be seen in appendix C1 for multiple applications.

Note 4: The value/capacity of the fuse is dependent on the total maximum current of the electrical components connected. See chapter 2.1 'Specification' for deterring the fuse values.

Note 5: Preferably put all ground connections (**except internal ignition driver (pin 17) and coil grounds!**) on the same chassis point, to prevent a difference in potential between the grounds.

Warning: The internal ignition driver (pin 17) and coil grounds should be connected to the chassis on a separate point to prevent remaining ignition currents from transferring to the ECU system.

2.1 Specification

2.1.1 Fuses

As described before, the value/capacity of the fuse for each voltage supply is dependent on the total maximum current of the electrical components connected. The following steps need to be taken to determine the capacity/value of the fuse for each 12V supply:

1. Calculate the maximum current by adding the currents below for the applications in use.

Application:	Current:
ECU (including all sensors and inputs)	1A
Shiftlight	1A
Single ignition coil	10A/single coil
4 cyl. dis ignition coil	20A
6 cyl. dis ignition coil	30A

2. After calculating the current, multiply this value by 1,2. The result is the **minimum** value/capacity of the fuse. The applied fuse should be the subsequent standard fuse value. (Standard fuse values: 2.5, 5, 7.5, 10, 15, 20, 25)

For example:

*12V ECU fuse: $ECU + Shiftlight = 2A * 1,2 = 2,4A$: minimum fuse value, so use in this case a 2,5A fuse for the 12V ECU.*

*12V Ignition coil supply: $6 \text{ single coils} = 60A * 1,2 = 72A$. When connecting 6 single coils, two separate 12V supply's should be made (see also appendix C1): $72A / 2 = 36A$: minimum fuse value, so use in this case two 40A fuses for both 12V Ignition coil supply's.*

2.1.2 Wire thickness

The following wire thicknesses should be maintained for the maximum continuous currents through the wires:

Maximum current:	Wire thickness:
3A	0,5 mm ²
7,5A	0,75 mm ²
15A	1 mm ²
25A	1,5 mm ²

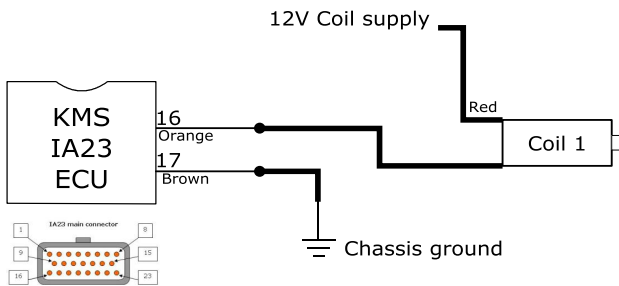
3 Appendix C1: Ignition system wiring

The connection/wiring of the ignition system depends on the type of ignition system and engine being used. The following diagrams illustrate the wiring for different ignition systems on different types of engines.

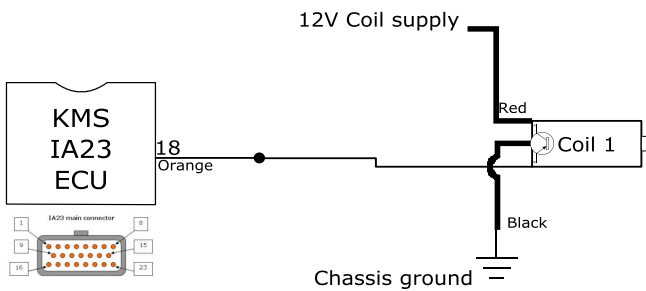
Warning: The IA23 ECU cannot be used on odd firing engines.

3.1 1 cylinder engines

3.1.1 1 cyl. single coil (without amplifier)

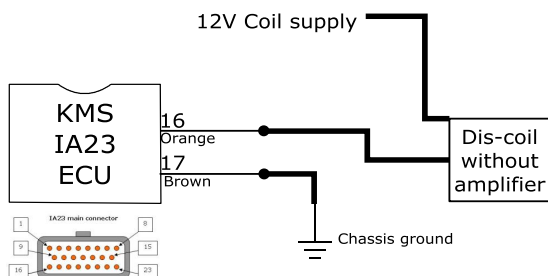


3.1.2 1 cyl. single coil (with amplifier)

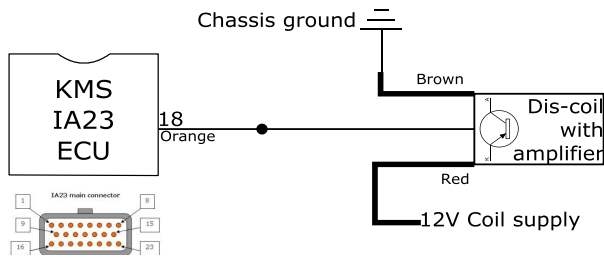


3.2 2 cylinder engines

3.2.1 2 cyl. dis-coil (without amplifier), firing order: 1-2

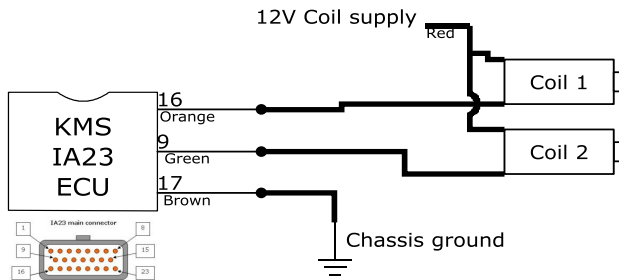


3.2.2 2 cyl. dis-coil (with amplifier), firing order: 1-2

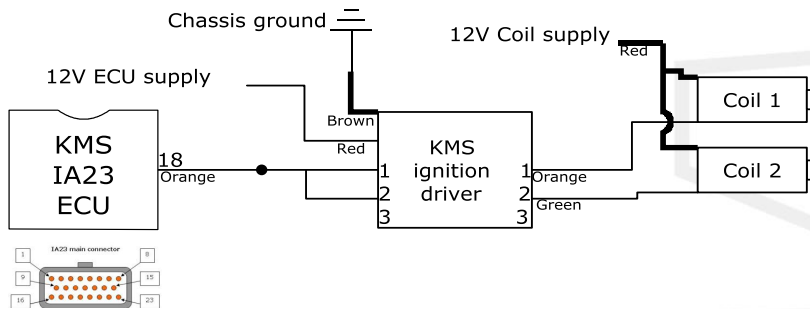


3.2.3 2 cyl. single coils (without amplifier), firing order: 1-2

Firing angle: 45°, 90° or 180°

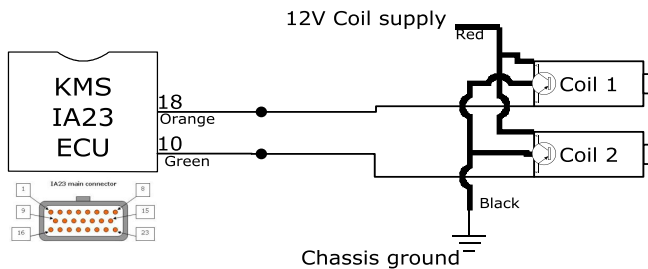


3.2.4 2 cyl. single coils (without amplifier), firing order: Simultaneous

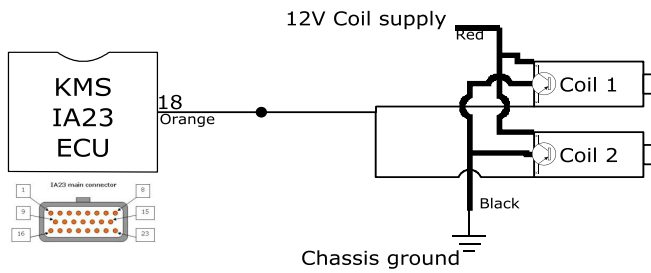


3.2.5 2 cyl. single coils (with amplifier), firing order: 1-2

Firing angle: 45°, 90° or 180°

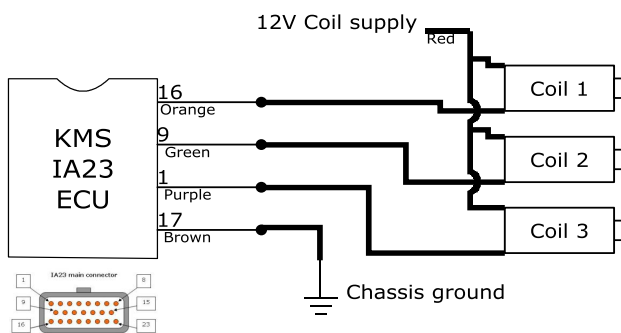


3.2.6 2 cyl. single coils (with amplifier), firing order: Simultaneous

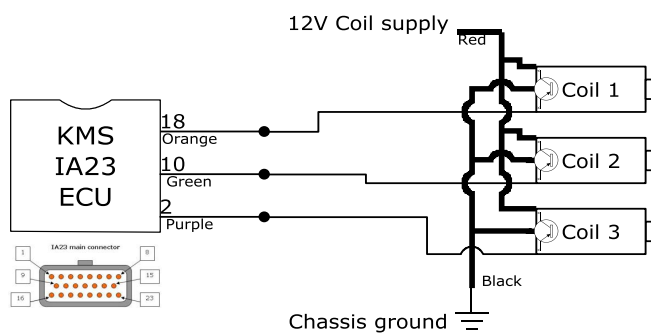


3.3 3 cylinder engines

3.3.1 3 cyl. single coils (without amplifier), firing order: 1-2-3

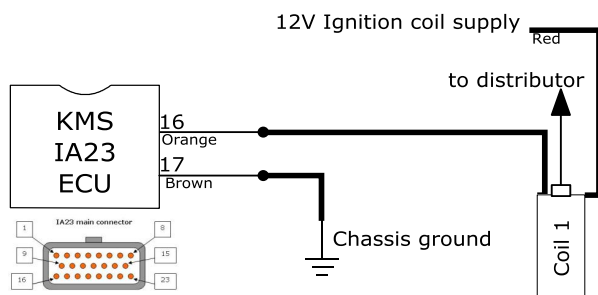


3.3.2 3 cyl. single coils (with amplifier), firing order: 1-2-3

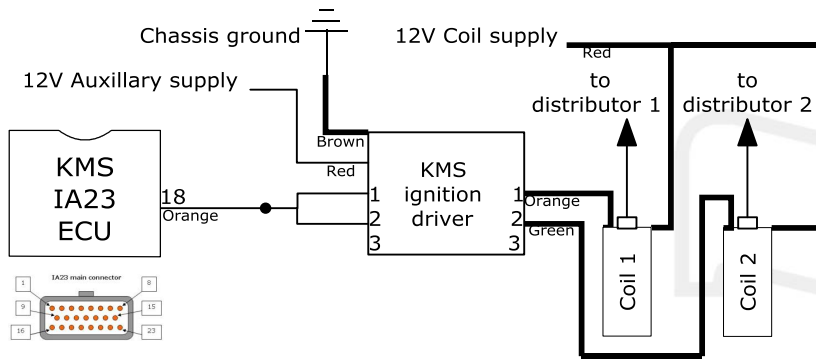


3.4 4 cylinder engines

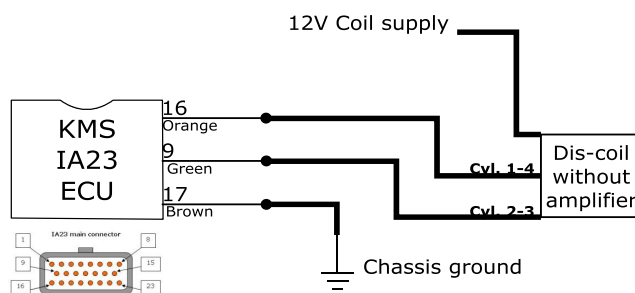
3.4.1 Single coil, single distributor (without amplifier)



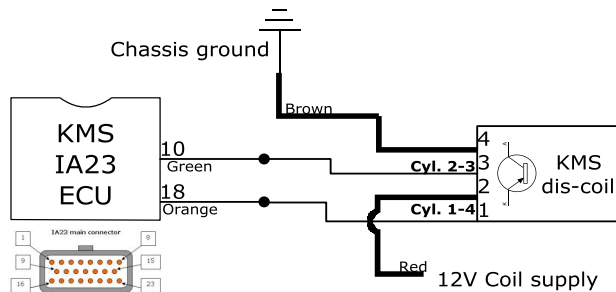
3.4.2 Twin coil, twin distributor (without amplifier)



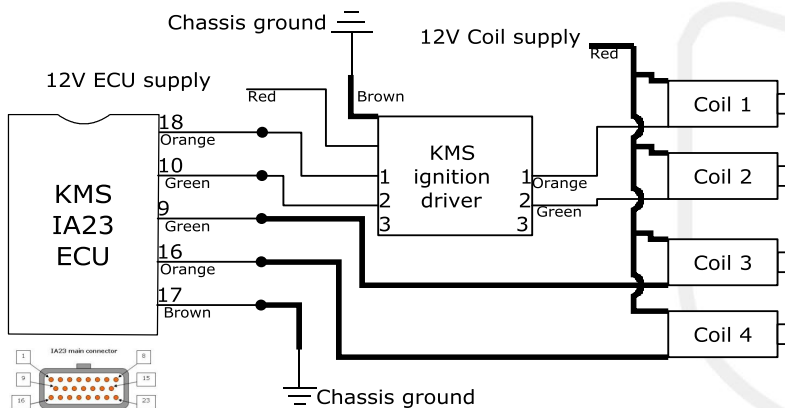
3.4.3 4 cyl. dis-coil (without amplifier), firing order: 1-3-4-2



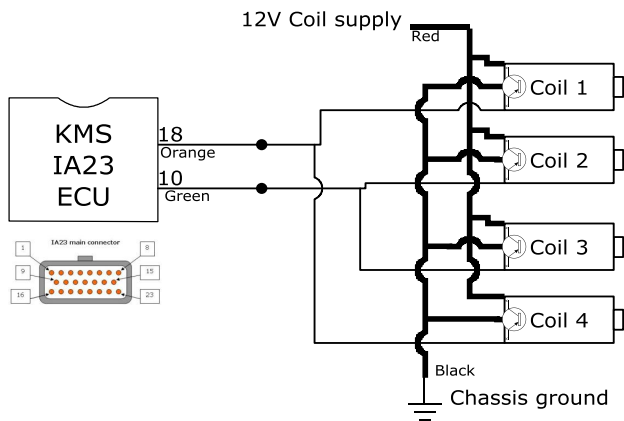
3.4.4 4 cyl. dis-coil (with amplifier), firing order: 1-3-4-2



3.4.5 4 cyl. single coils (without amplifier), firing order: 1-3-4-2

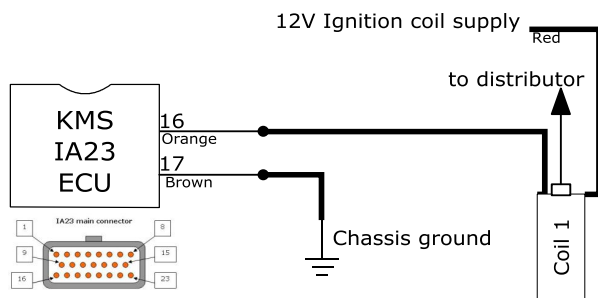


3.4.6 4 cyl. single coils (with amplifier), firing order: 1-3-4-2

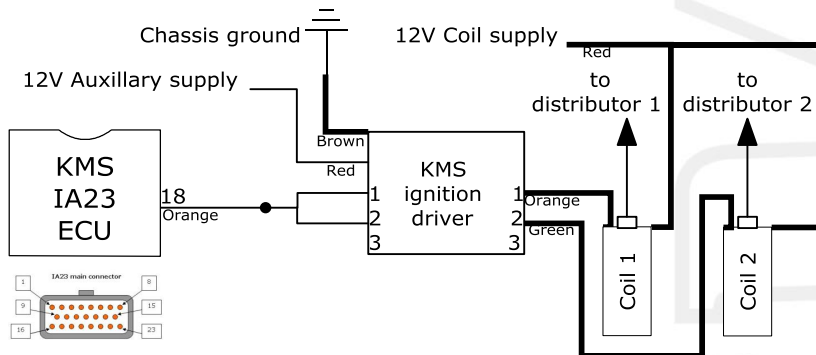


3.5 6 cylinder engines (120° ignition angle only)

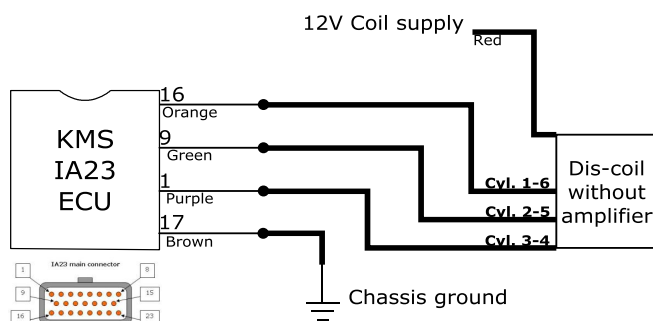
3.5.1 Single coil, single distributor (without amplifier)



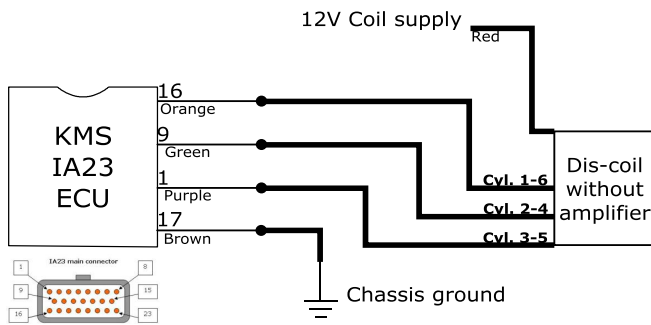
3.5.2 Twin coil, twin distributor (without amplifier)



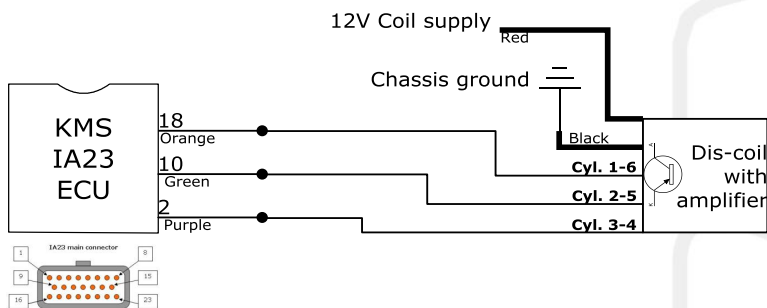
3.5.3 6 cyl. line dis-coil (without amplifier), firing order: 1-5-3-6-2-4



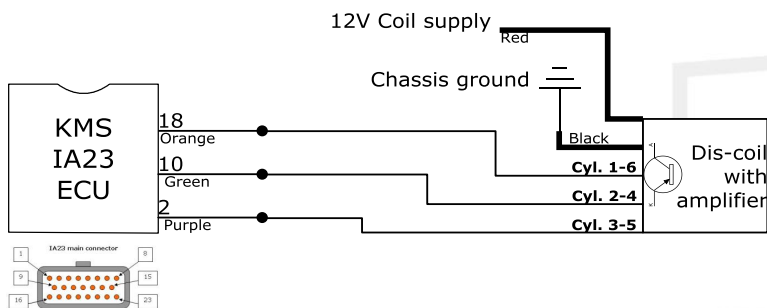
3.5.4 V6 dis-coil (without amplifier), firing order: 1-4-3-6-2-5



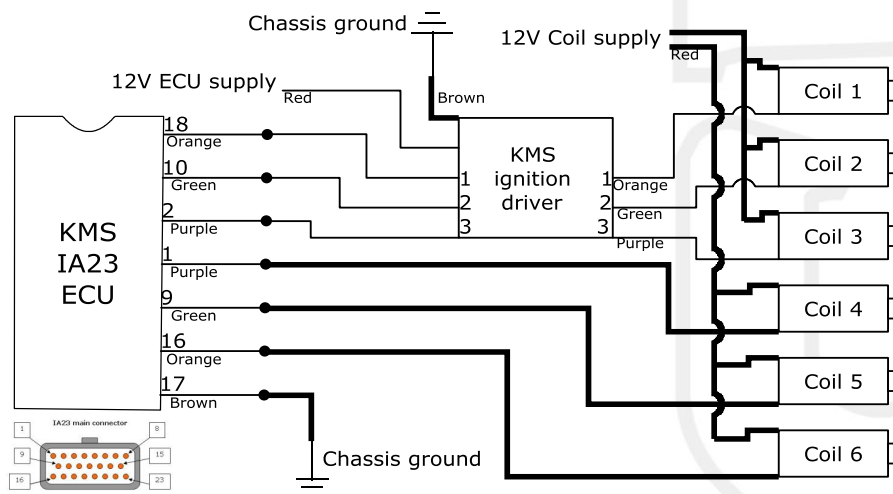
3.5.5 6 cyl. line dis-coil (with amplifier), firing order: 1-5-3-6-2-4



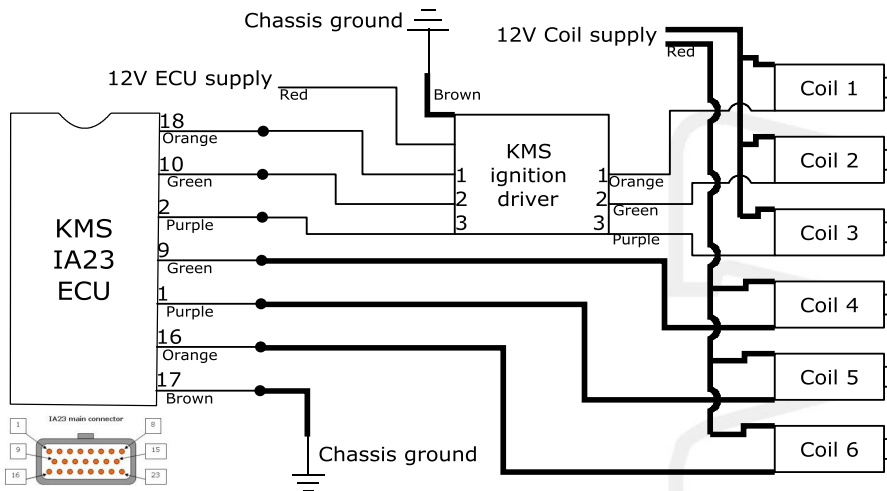
3.5.6 V6 dis-coil (with amplifier), firing order: 1-4-3-6-2-5



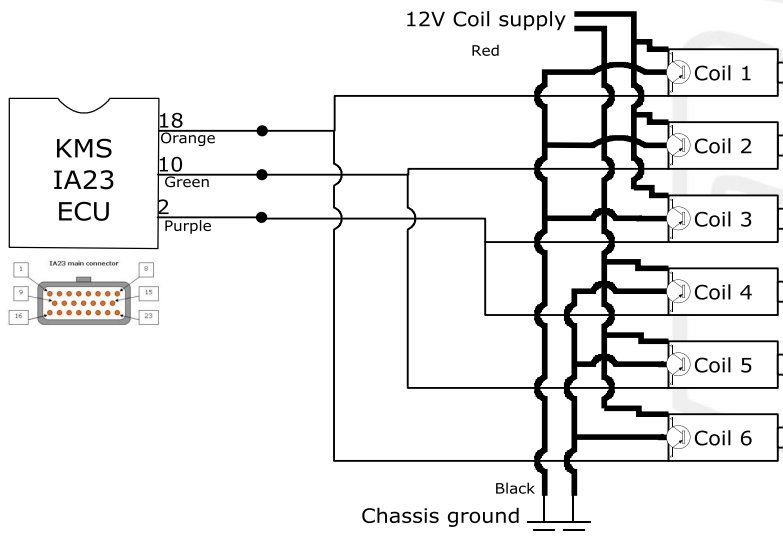
3.5.7 6 cyl. line single coils (without amplifier), firing order: 1-5-3-6-2-4



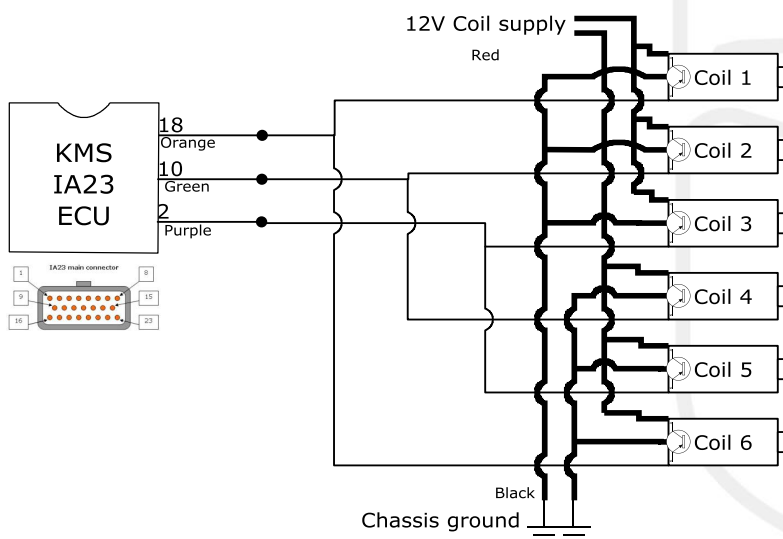
3.5.8 V6 single coils (without amplifier), firing order: 1-4-3-6-2-5



3.5.9 6 cyl. line single coils (with amplifier), firing order: 1-5-3-6-2-4



3.5.10 V6 single coils (with amplifier), firing order: 1-4-3-6-2-5



3.6 8 cylinder engines

3.6.1 V8 single coil, single distributor (without amplifier)

