

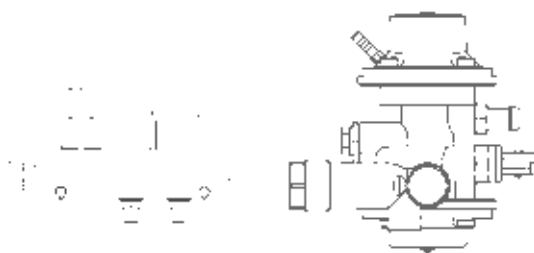
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installation handbook - 1/3
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software handbook - 3/3

CNG Sequent fastness with BRC injectors and Zenith reducer



USEFUL REFERENCES

For further information on “SEQUENT FASTNESS” system, it is recommended to refer to the other handbooks and informative documents published by BRC.

• **Installer’s handbook.**

It is the easiest way to obtain fundamental, general information regarding the installation of the SEQUENT FASTNESS equipment.

Inside that, it is moreover possible to find:

- knowledge about the working principle and the structure of the system,
- a detailed description of the components which the system is made up,
- indications about the assembly of the mechanical part and electrical connections.

• **Software handbook.**

It is the indispensable guide for who wants to learn managing the system by means of a personal computer, realizing mappings, programming the ECUs, making diagnosis, modifying the working parameters. It describes the working of the “SEQUENT FASTNESS” software, which runs on Personal Computers, by driving the user in the various steps of each function.



Modular Common Rail system for gas

electro-assisted valve

- 1 gauge with CNG resistive pressure sensor
- 1 bag containing screws, nuts and various fittings.

The present handbook results particularly useful to the installer when he decides to convert a vehicle for which BRC has not marketed the specific kits yet.

In this case it is therefore very important that the installer knows how to choose a basic kit and a standard kit suitable to the vehicle that is being converted, depending on the number of its cylinders and their location, the type of engine (aspirated and supercharged) and the power.

Zenith pressure reducer is supplied with a Delta p (Δp) adjustment equal to about 2000 mbar.

If necessary, this value can be changed between 1600 and 2500 mbar by the technician by acting on the suitable screw.

As already referred to in Chapter 1 of the Installer's Handbook, we are herebelow reporting for your convenience the GENERAL composition of the basic and the standard kits.

For an easy research, this guide lists all the fed powers and Δp values. Please note that the guide only refers to CNG Fastness Sequent System with BRC injectors and Zenith reducer.

The CNG Sequent Fastness basic kit contains:

- 1 FLY SF ECU without cartography,
- 1 harness (BRC Injectors),
- 1 roll of copper or steel pipe,
- 8x15 Water pipe
- 1 ZENITH SEQUENT CNG pressure reducer with gas temperature sensor,
- 1 MAP CNG pressure sensor,
- 1 VM A3 /E "WP" Classic CNG

The CNG Sequent Fastness standard kit contains:

- 3 (or 4, 5 or 6, depending on the number of cylinders) BRC gas injectors with respective calibrated nozzles,
- 1 BRC injectors connection rail, with fittings attached,
- 10x17 12x19 Gas pipe,
- 5x10,5 Gas pipe to be used on the injectors and on the pressure points,
- A bag containing: idling nozzle, nylon Y piece, nuts, junctions and "click" clamps for 5x10,5, and 12x19 gas pipes, "click" clamps for the pressure points.

It is obvious that both the basic and the standard kits are available in various configurations.

Listing the complete description of all basic and standard kits devised by BRC will be superfluous and prolix. But, in the following mechanical diagrams, referring to the type of vehicle to be converted, we indicate the necessary basic and standard kits, inside which the installer will find the suitable and essential products for the conversion.

For the general electrical connections it will be sufficient to follow the wiring diagrams indicated on each mechanical diagram.

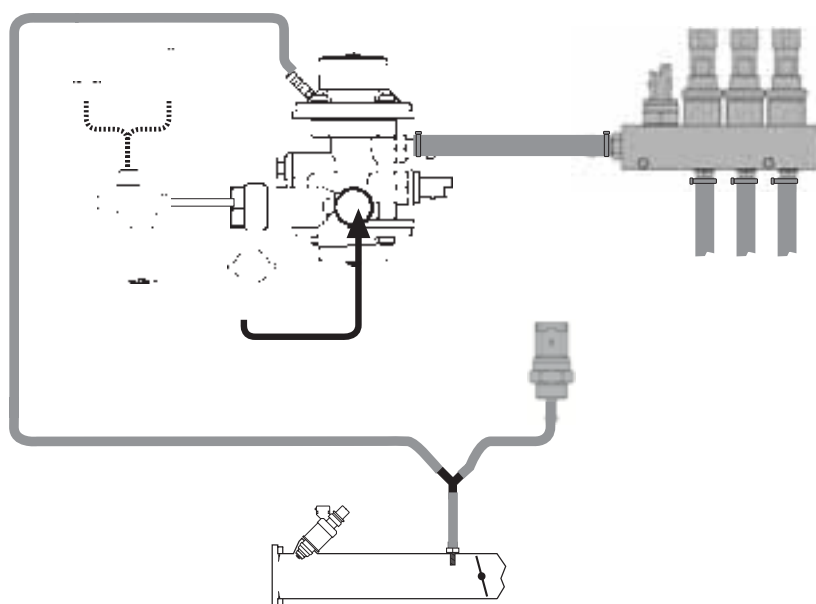
Please remark that the representation of the products on the mechanical diagrams is purely indicative. The main products present inside the standard kits are distinguishable by GREY colour, while the main products present inside the basic kits are distinguishable with WHITE colour.



CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 3-CYLINDER

M.D. 1
CNG

Vehicle Type	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
3 Cylinders Aspirated Δp 1600 mbar/Pow. max 45 kW Δp 2000 mbar/Pow. max 50 kW or Supercharged Δp 2000 mbar/Pow. max 60 kW	BRC NORMAL	09SQ00002103G	09SM00000104 o 09SM00000154 Zenith CNG Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 01 CNG



Notes:

- The kit **09SM00000104** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000154** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

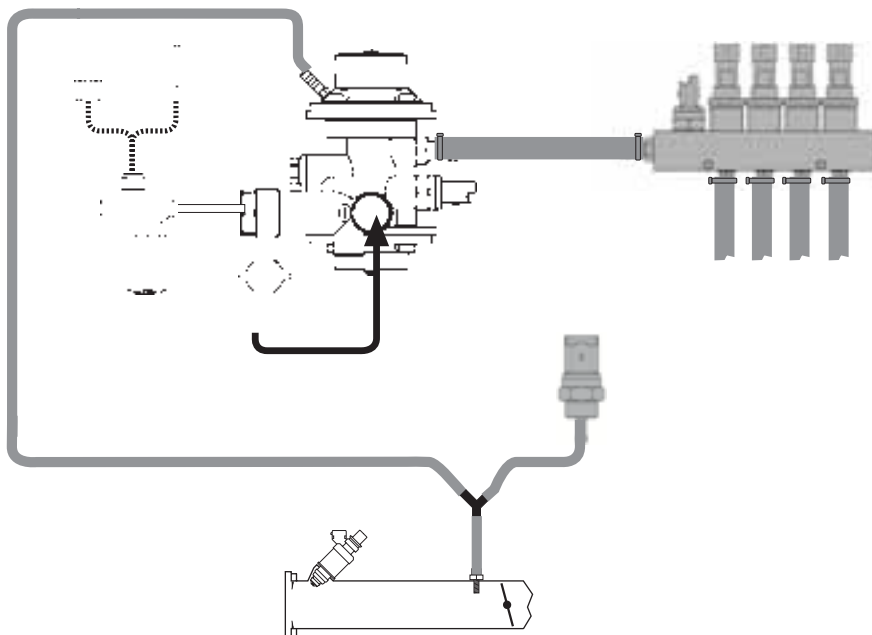




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 4-CYLINDER

M.D. 2
CNG

Vehicle Type	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
4 Cylinders Aspirated Δp 1600 mbar/Pow. max 50 kW Δp 2000 mbar/Pow. max 60 kW	BRC NORMAL	09SQ00002107G	09SM00000104 or 09SM00000154 Zenith CNG Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 02 CNG
4 Cylinders Aspirated Δp 2000 mbar/Pow. included between 60 and 90 kW Δp 2500 mbar/Pow. included between 60 and 100 kW	BRC MAX	09SQ00002108G	09SM00000104 or 09SM00000154 Zenith CNG Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 02 CNG
4 Cylinders Supercharged Δp 2000 mbar/Pow. included between 60 and 100 kW Δp 2500 mbar/Pow. included between 60 and 115 kW	BRC MAX	09SQ00002108G	09SM00000104 or 09SM00000154 Zenith CNG Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 02 CNG



Notes:

- The kit **09SM00000104** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000154** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

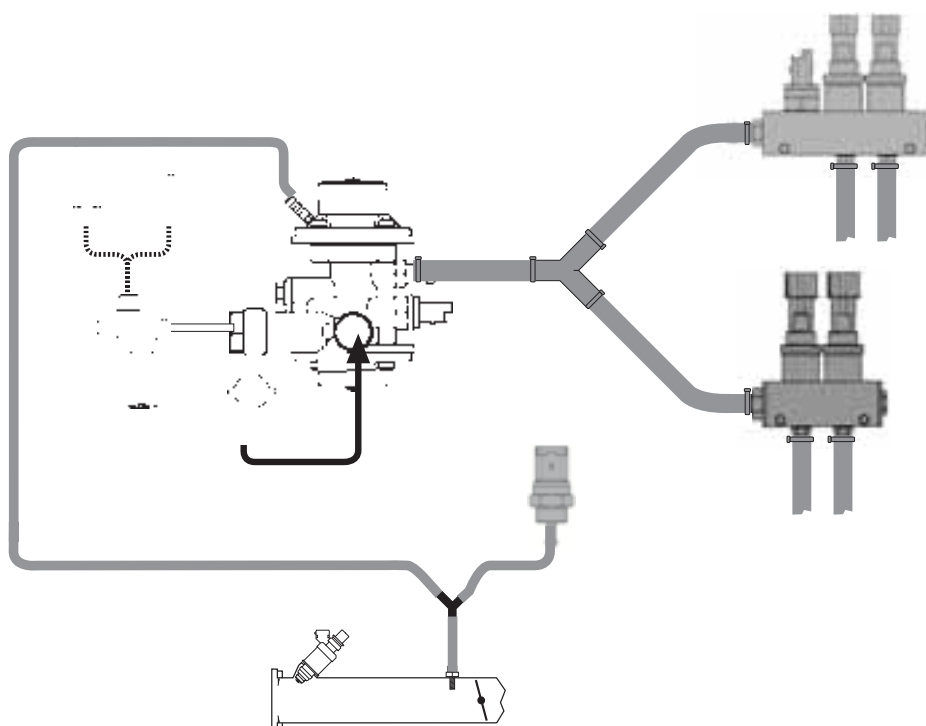




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 4-CYLINDER BOXER

M.D. 3
CNG

Vehicle Type	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
4 Cylinders Boxer Aspirated Δp 2000 mbar/Pow. included between 60 and 90 kW Δp 2500 mbar/Pow. included between 60 and 100 kW	BRC MAX	09SQ00002102G	09SM00000104 o 09SM00000154 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 03 CNG
4 Cylinders Boxer Supercharged Δp 2000 mbar/Pow. included between 60 and 100 kW Δp 2500 mbar/Pow. included between 60 and 115 kW	BRC MAX	09SQ00002102G	09SM00000104 o 09SM00000154 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 03 CNG



Notes:

- The kit **09SM00000104** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000154** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

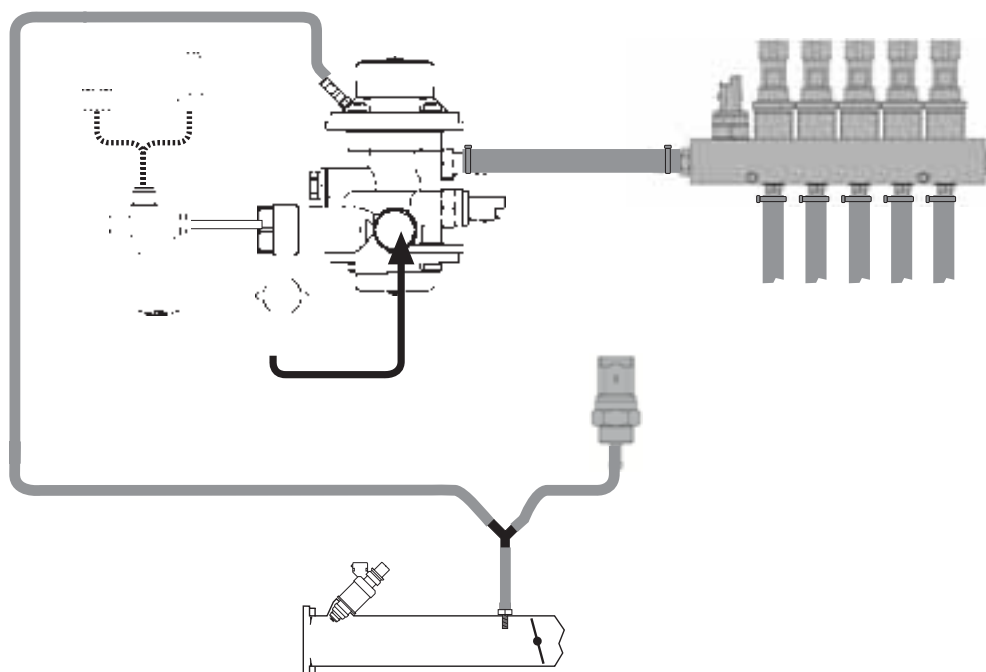




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 5-CYLINDER

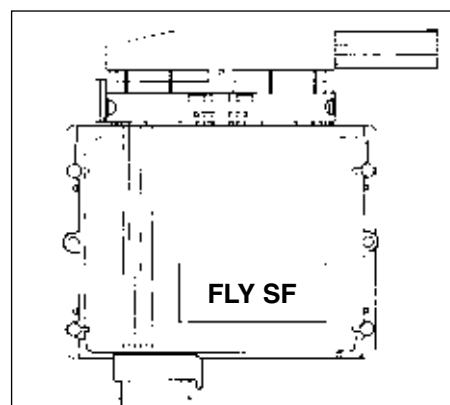
M.D. 4
CNG

Vehicle Type	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
5 Cylinders Aspirated Δp 2000 mbar/Pow. max 110 kW Δp 2500 mbar/Pow. max 125 kW	BRC MAX	09SQ00002112G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 04 CNG
5 Cylinders Supercharged Δp 2000 mbar/Pow. max 120 kW Δp 2500 mbar/Pow. max 140 kW	BRC MAX	09SQ00002112G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 04 CNG



Notes:

- The kit **09SM00000108** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000158** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

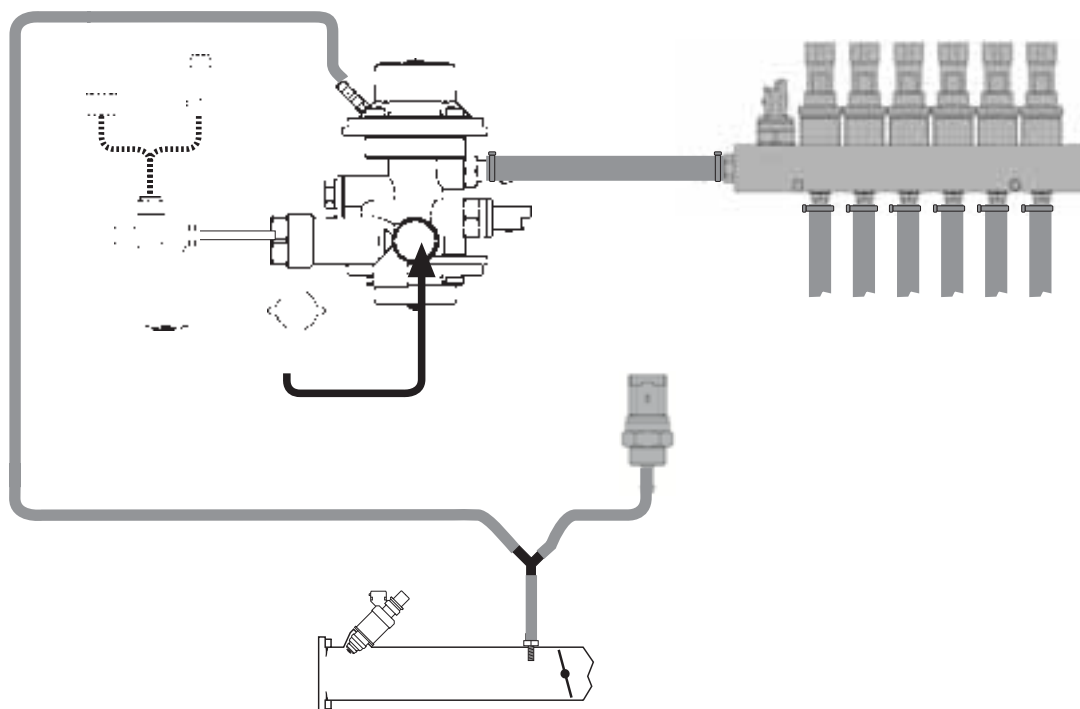




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 6-CYLINDER

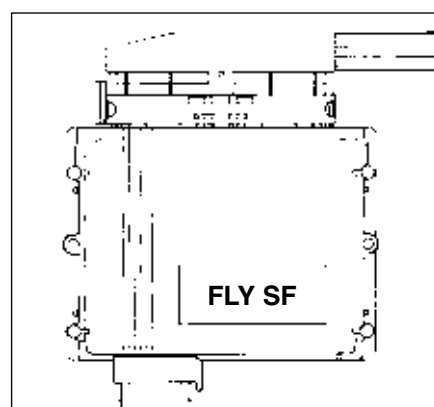
M.D. 5
CNG

Vehicle Type	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
6 Cylinders Aspirated Δp 2000 mbar/Pow. max 130 kW Δp 2500 mbar/Pow. max 150 kW	BRC MAX	09SQ00002113G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 05 CNG
6 Cylinders Supercharged Δp 2000 mbar/Pow. max 150 kW Δp 2500 mbar/Pow. max 175 kW	BRC MAX	09SQ00002113G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 05 CNG



Notes:

- The kit **09SM00000108** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000158** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

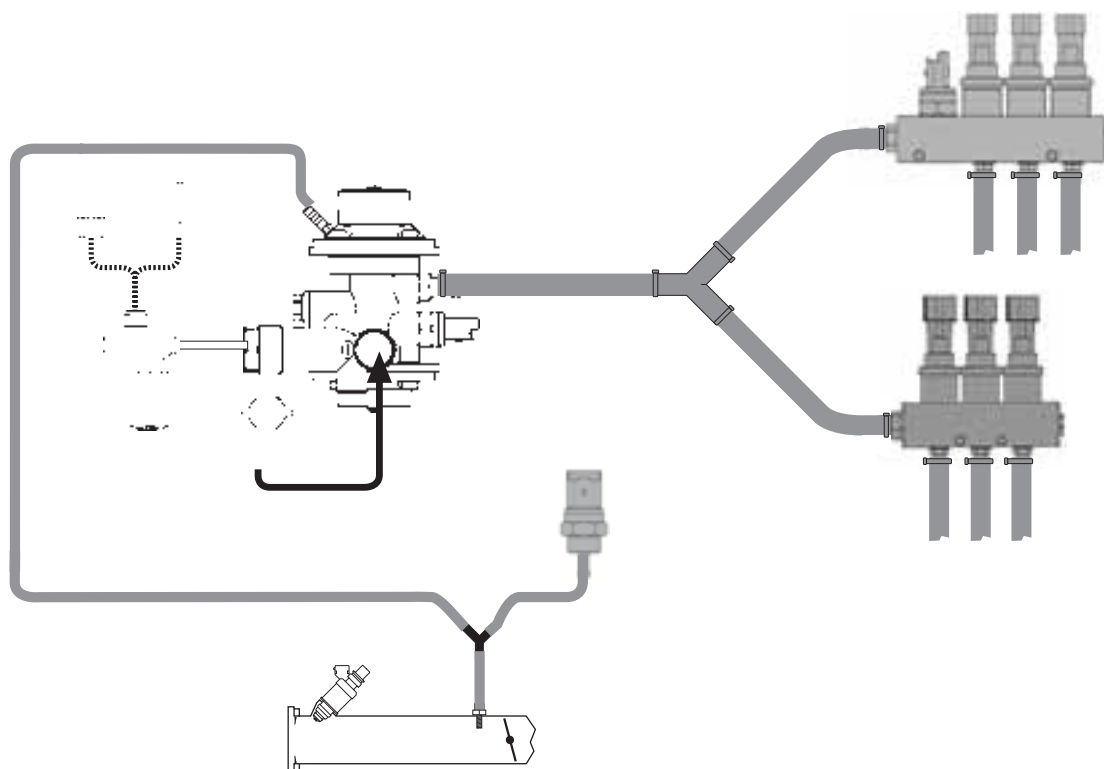




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 6 CYLINDERS "V-shaped"

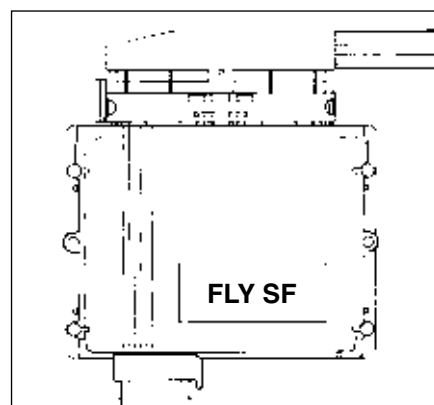
M.D. 6
CNG

Gas injectors	Gas injectors	Standard Kit	Basic Kit	Electrical Diagram
6 Cylinders "V-shaped" Aspirated Δp 2000 mbar/Pow. max 130 kW Δp 2500 mbar/Pow. max 150 kW	BRC MAX	09SQ00002106G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 06 CNG
6 Cylinders "V-shaped" Supercharged Δp 2000 mbar/Pow. max 150 kW Δp 2500 mbar/Pow. max 175 kW	BRC MAX	09SQ00002106G	09SM00000108 o 09SM00000158 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 06 CNG



Notes:

- The kit **09SM00000108** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000158** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.

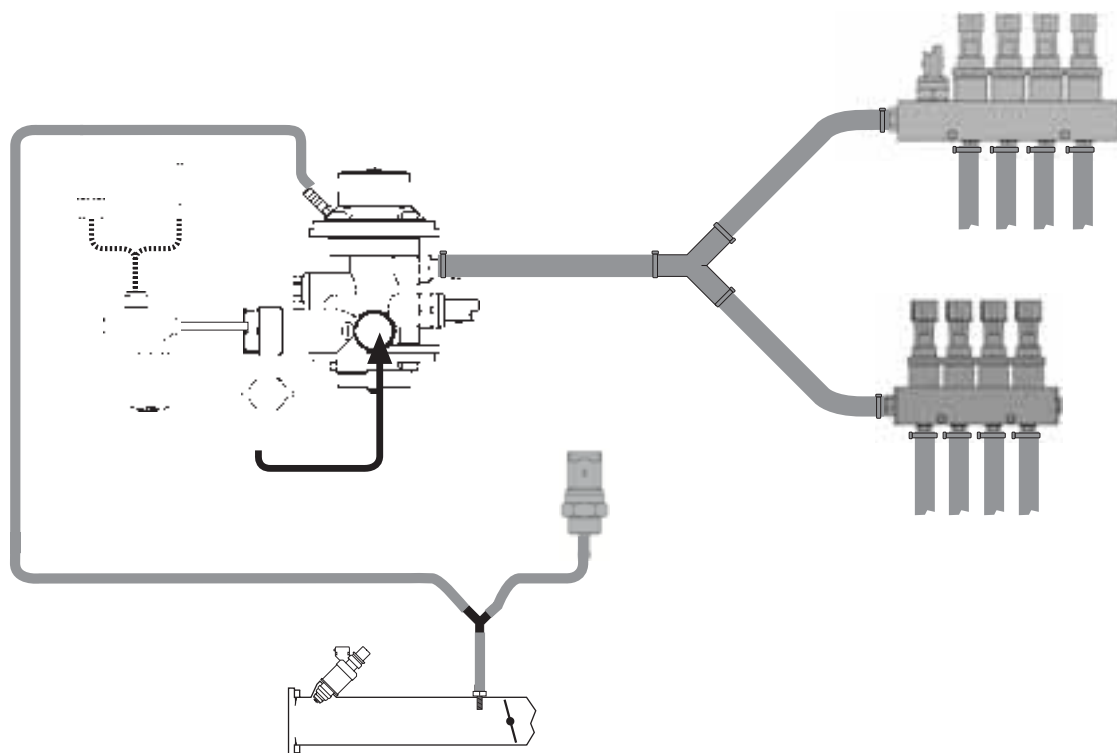




CNG SEQUENT FASTNESS MECHANICAL DIAGRAM ON VEHICLES WITH 8 CYLINDERS "V-shaped"

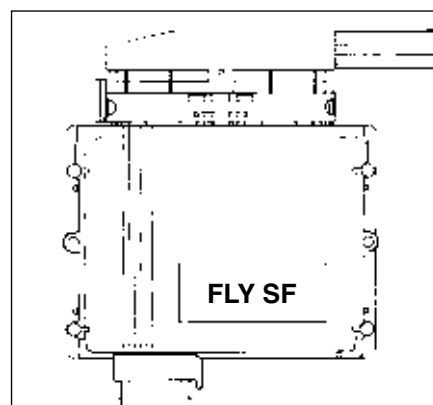
T.I. 07
CNG

Vehicle Type	Gas injectors	Standard Kit	Base Kit	Electrical Diagram
8 Cylinders "V-shaped" Aspirated Δp 2000 mbar/Pow. max 175 kW Δp 2500 mbar/Pow. max 200 kW	BRC MAX	09SQ00002110G	09SM00000116 o 09SM00000166 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 07 CNG
8 Cylinders "V-shaped" Supercharged Δp 2000 mbar/Pow. max 200 kW Δp 2500 mbar/Pow. max 230 kW	BRC MAX	09SQ00002110G	09SM00000116 o 09SM00000166 CNG Zenith Reductor CNG Valve "VM A3-E" MAP Sensor	T.I. 07 CNG



Notes:

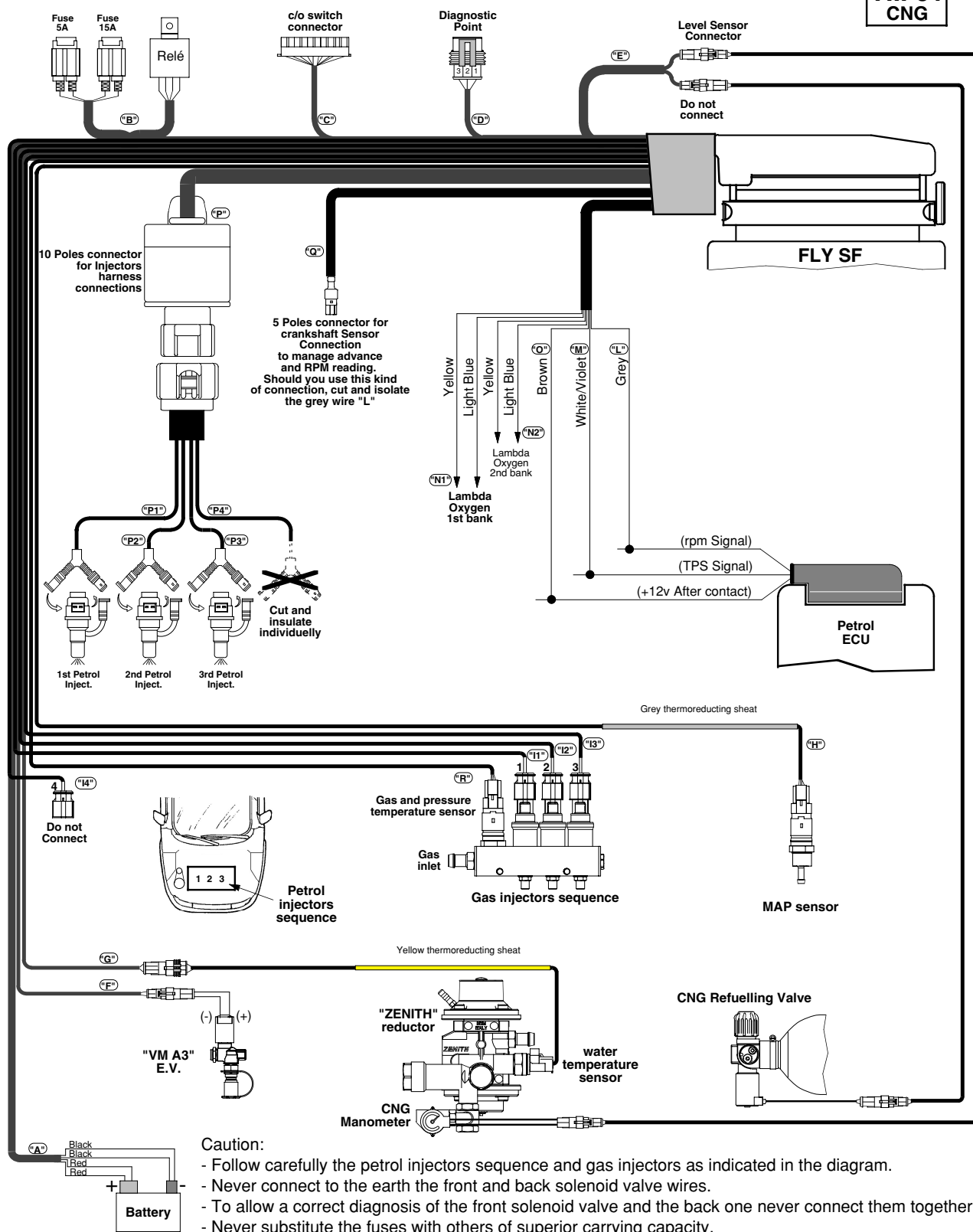
- The kit **09SM00000116** contains the \varnothing 6x4 covered copper pipe.
- The kit **09SM00000166** contains the \varnothing 6x4 covered steel pipe.
- The CNG refuelling point or the shutter (code PR904803) indicated in the figure by a dashed line are sold separately.



CNG SEQUENT FASTNESS WIRING DIAGRAM

FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 3-CYLINDER

T.I. 01
CNG



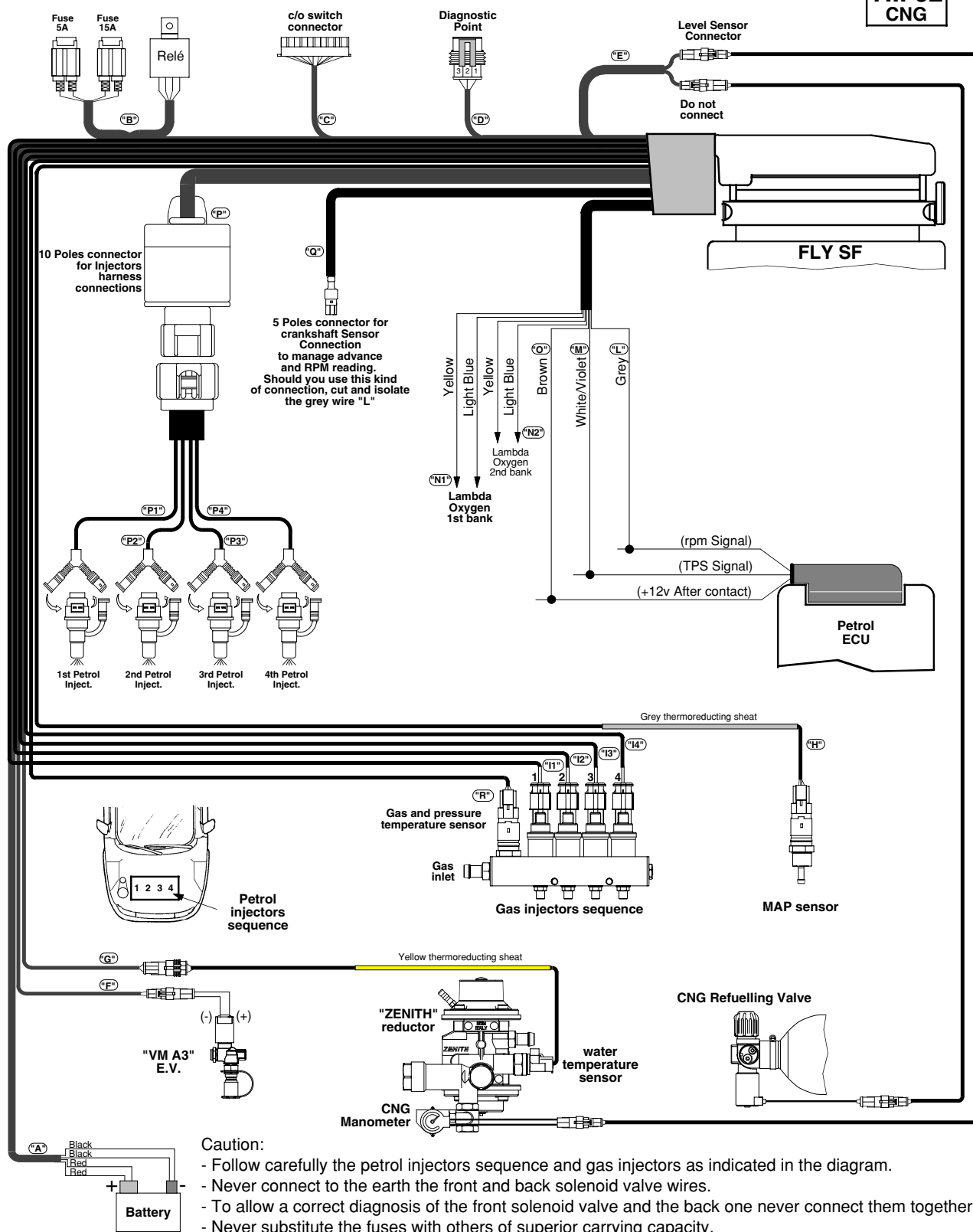
CAUTION:

Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity - Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM

FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 4-CYLINDER

T.I. 02
CNG



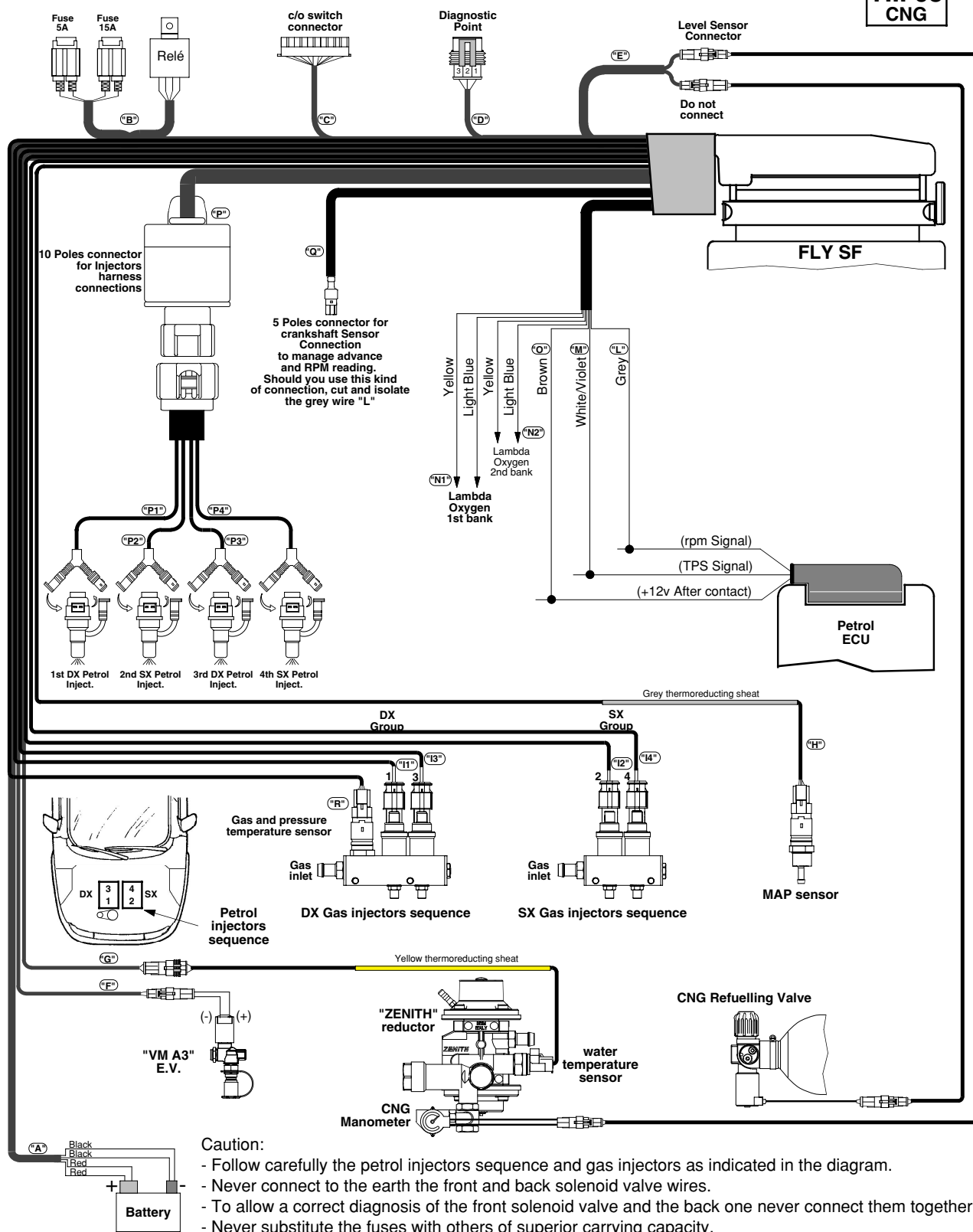
CAUTION:

Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity - Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM

FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE BOXER 3-CYLINDER

T.I. 03
CNG



CAUTION:

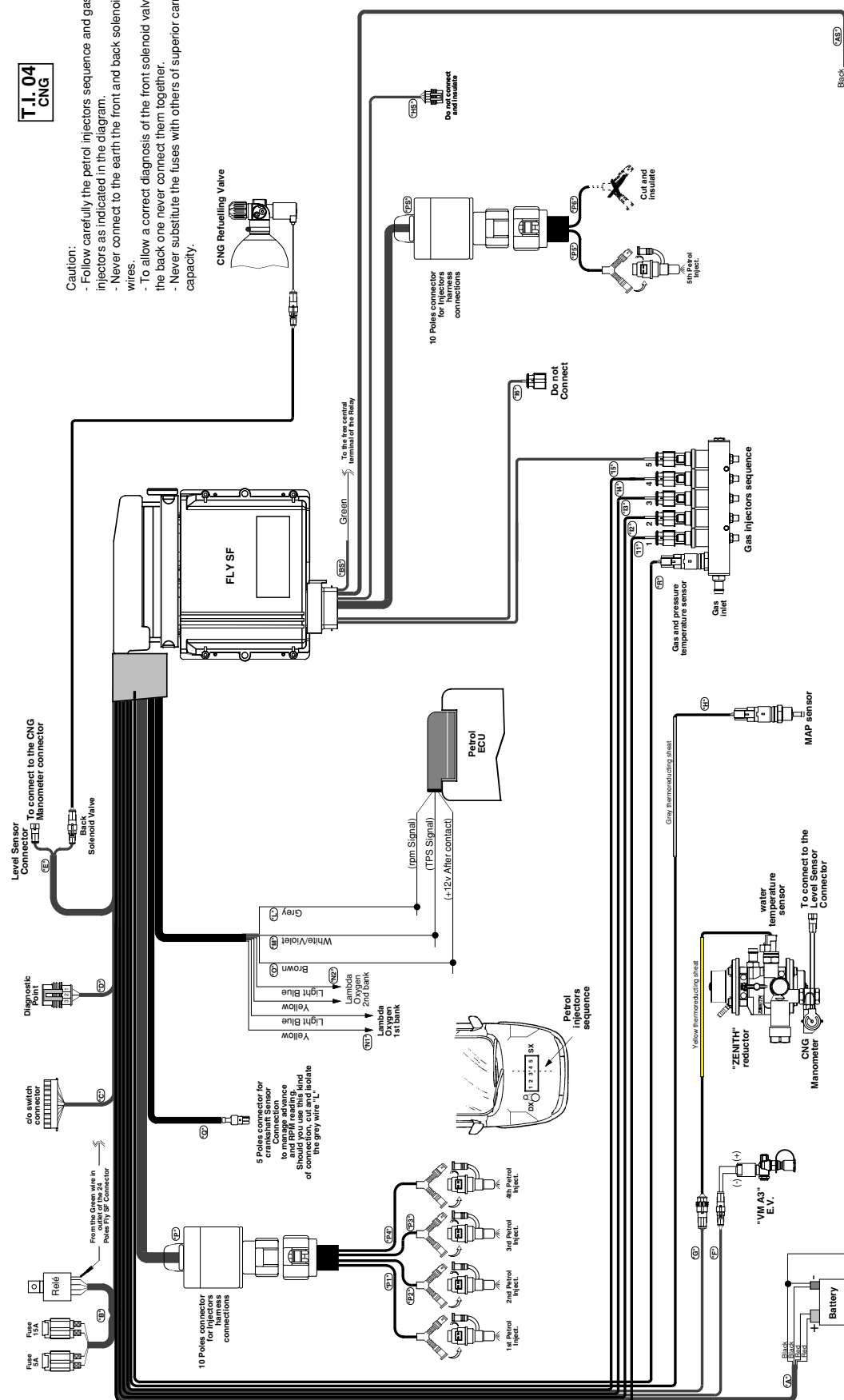
Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity - Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 5-CYLINDER

T.I. 04
CNG

Caution: Follow carefully the petrol injectors sequence and gas injectors as indicated in the diagram.
Never connect to the earth the front and back solenoid wires.

To allow a correct diagnosis of the front solenoid valve the back one never connect them together.
Never substitute the fuses with others of superior carry capacity.



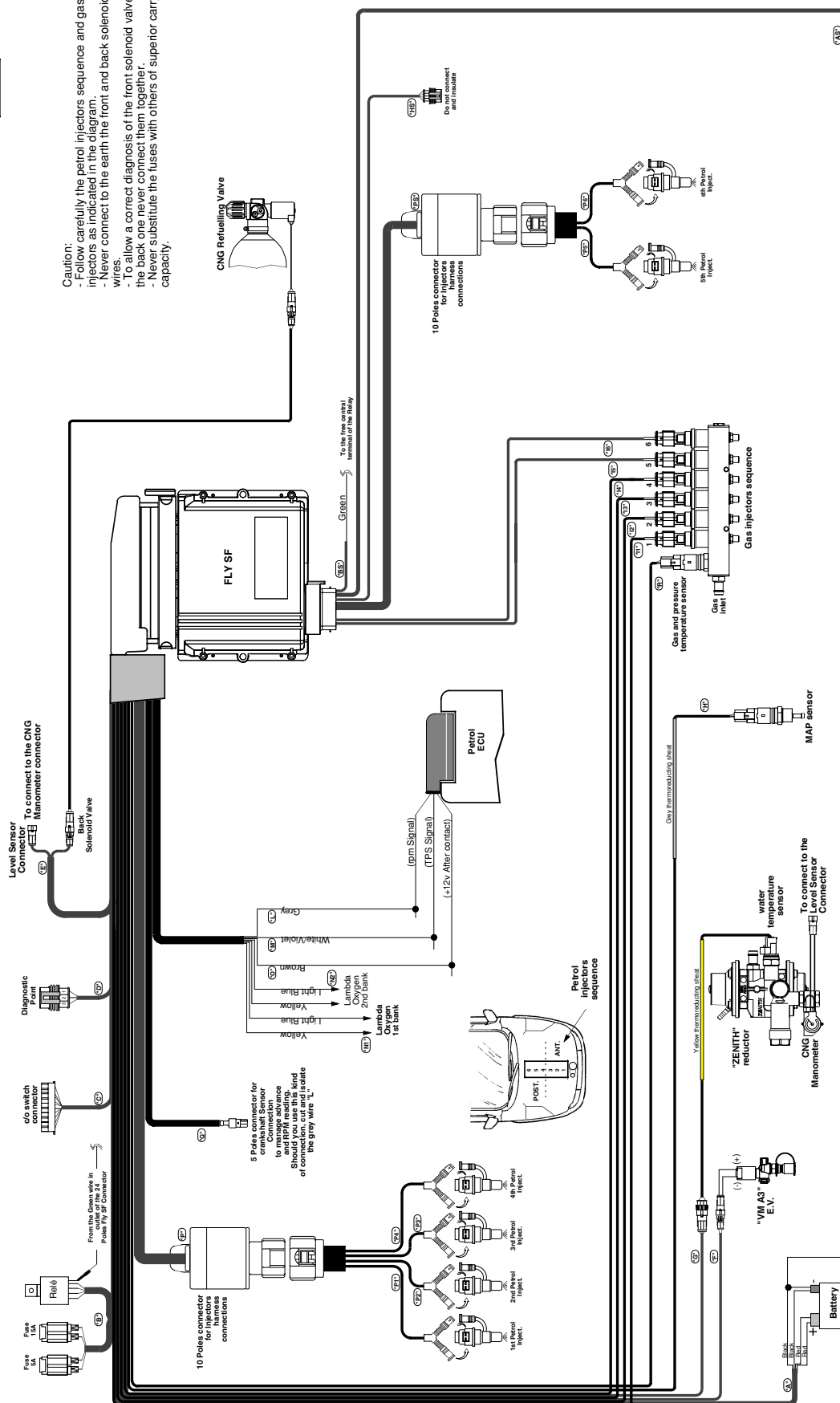
CAUTION:

Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity. Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 6 STRAIGHT CYLINDER BANK

T.J. 05
CNG

Caution:
- Follow carefully the petrol injectors sequence and gas injectors as indicated in the diagram.
- Never connect to the earth the front and back solenoid valve wires.
- To allow a correct diagnosis of the front solenoid valve a the back one never connect them together.
- Never substitute the fuses with others of superior carry-in capacity.



CAUTION:

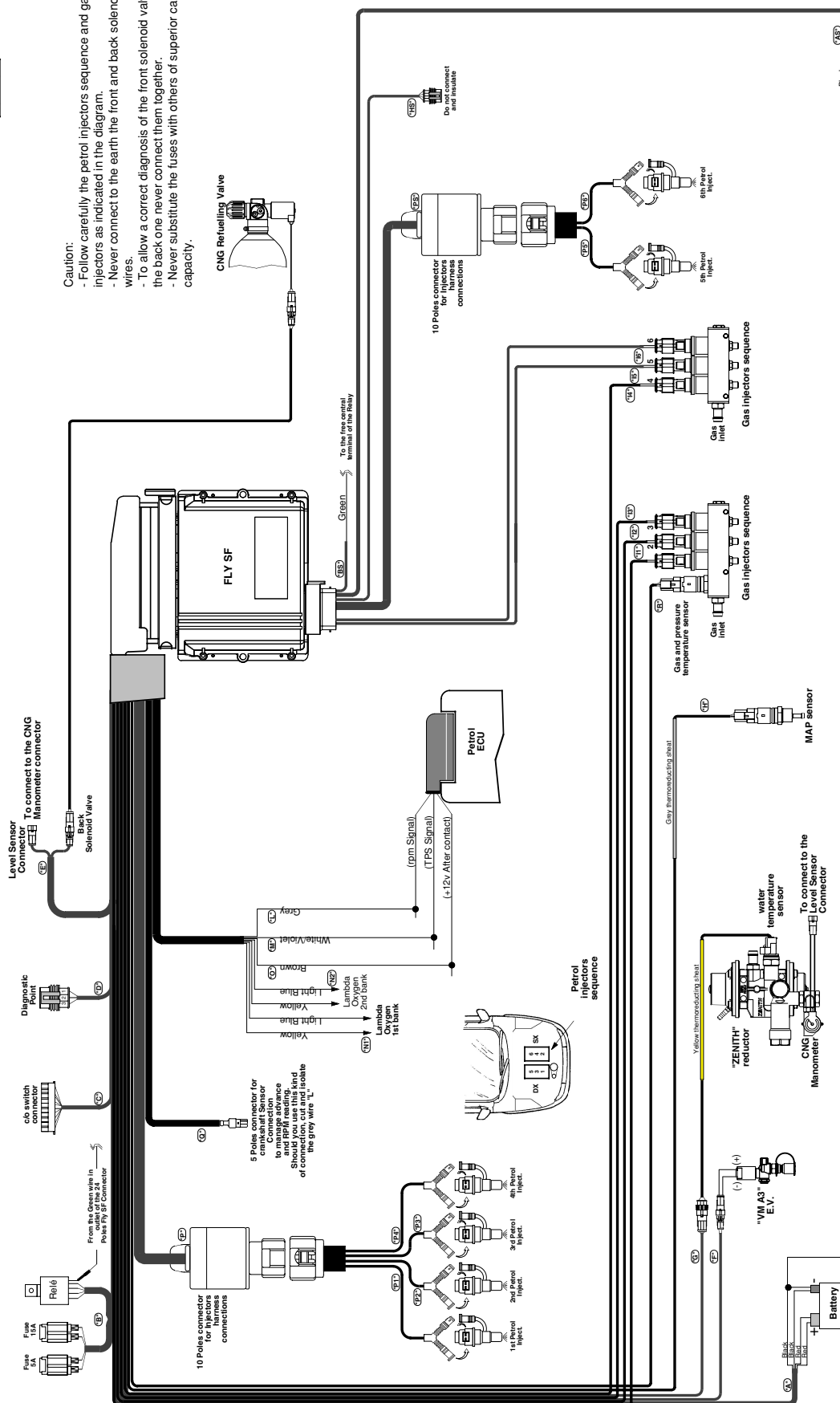
Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity - Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 6-CYLINDER "V-SHAPED"

T.I. 06
CNG

Caution:

- Follow carefully the petrol injectors sequence and gas injectors as indicated in the diagram.
- Never connect to the earth the front and back solenoid wires.
- To allow a correct diagnosis of the front solenoid valve the back one never connect them together.
- Never substitute the fuses with others of superior capacity.



CAUTION:

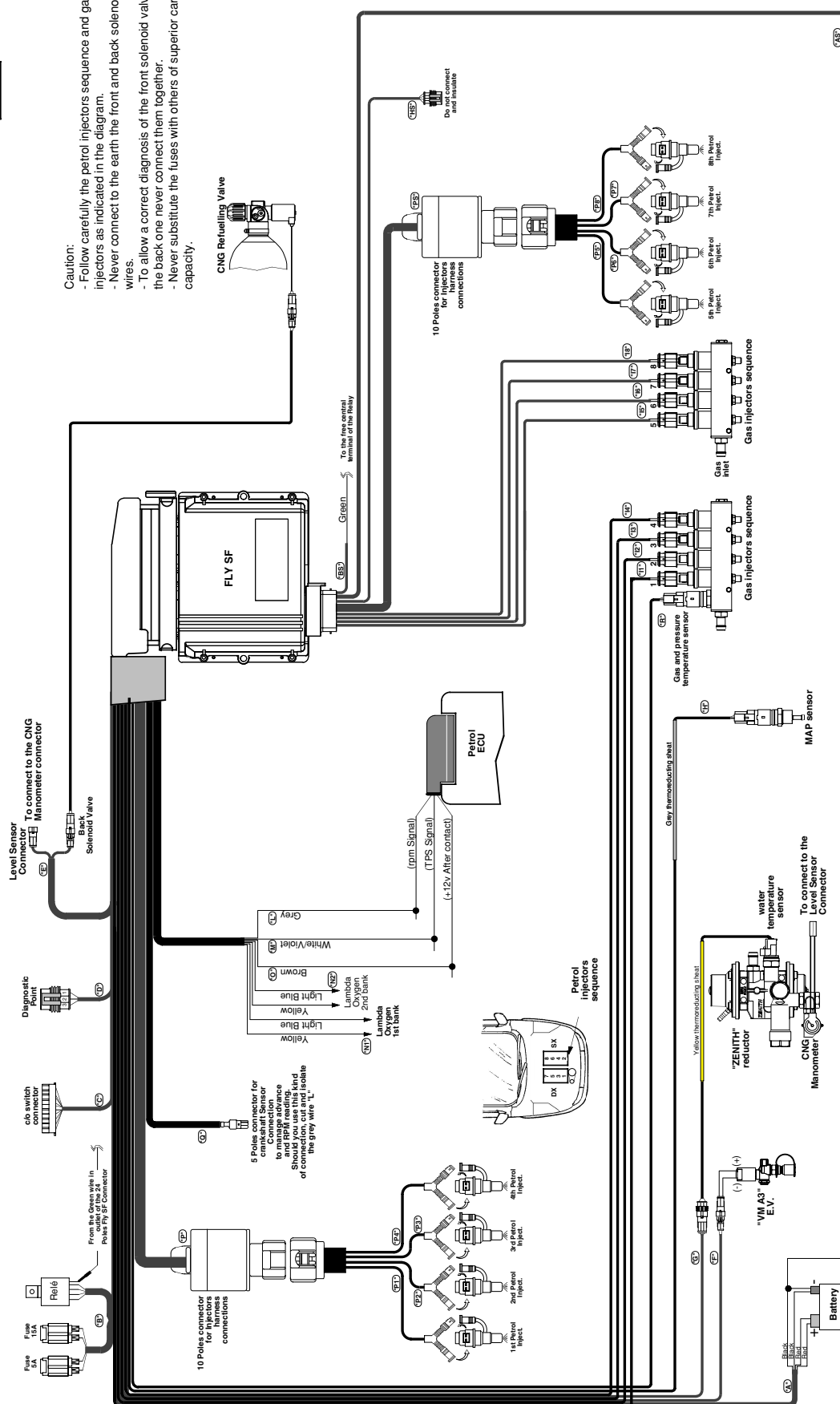
Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity - Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

CNG SEQUENT FASTNESS WIRING DIAGRAM FOR VEHICLES WITH ASPIRATED OR SUPERCHARGED ENGINE 8-CYLINDER “V-SHAPED”

T.I. 07
CNG

Caution:

- Follow carefully the petrol injectors sequence and gas injectors as indicated in the diagram.
- Never connect to the earth the front and back solenoid wires.
- To allow a correct diagnosis of the front solenoid valve the back one never connect them together.
- Never substitute the fuses with others of superior carry capacity.



CAUTION:

Be careful with the cars for which the manufacturer prohibits or advises against disconnecting the battery, not to alter the antitheft devices or automatic adaptivity. Never use welders connected to the battery of the same car - Connect with suitably insulated soft solderings - Position the BRC electrical devices in a well ventilated area, protected from water seepages and heat sources - We recommend to insulate the BRC electronic control unit wires which are not connected - BRC reserves the right to modify this diagram without notice - We also recommend you to be sure to have the last revision of the diagram drawn up by BRC.

OTHER POSSIBLE TYPOLOGIES OF CONNECTION REFERRED TO THE CNG SEQUENT FASTNESS WIRING DIAGRAMS

Possible spark advance function.

Connections to be made by using the SPECIFIC INTERFACE CABLES supplied by BRC compatible with the connector of the top dead center sensor

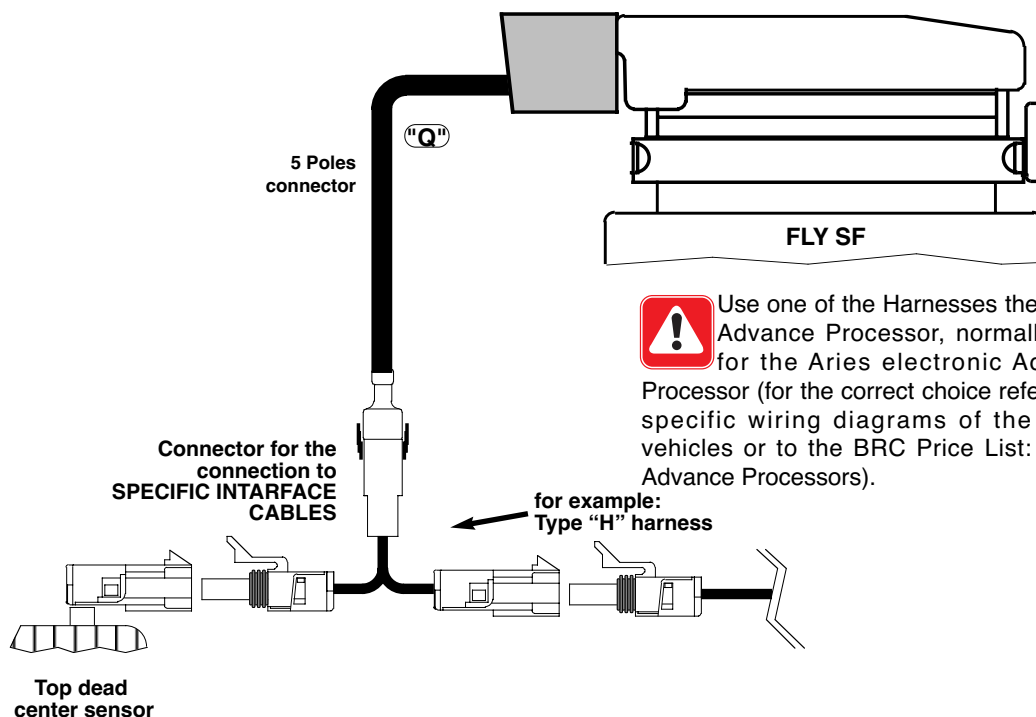


Fig. 01

Possible spark advance function.

Connections to be made when the connector of the top dead center sensor is not compatible with the SPECIFIC INTERFACE CABLES supplied by BRC.

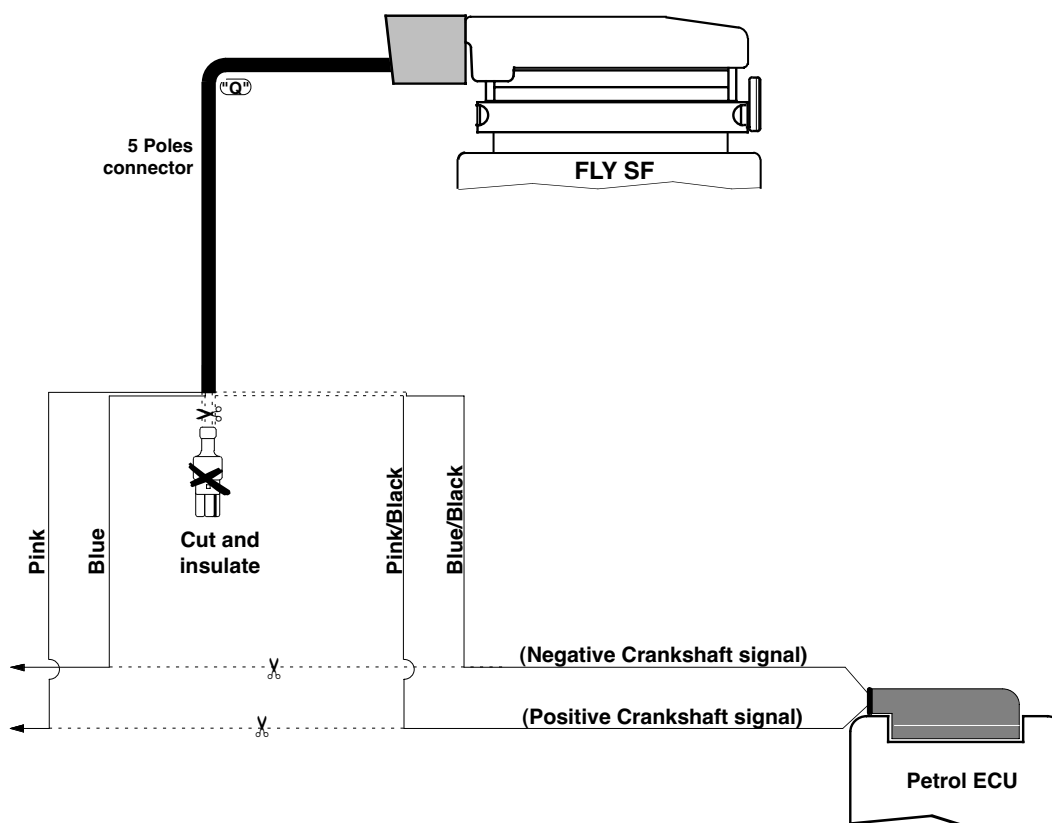
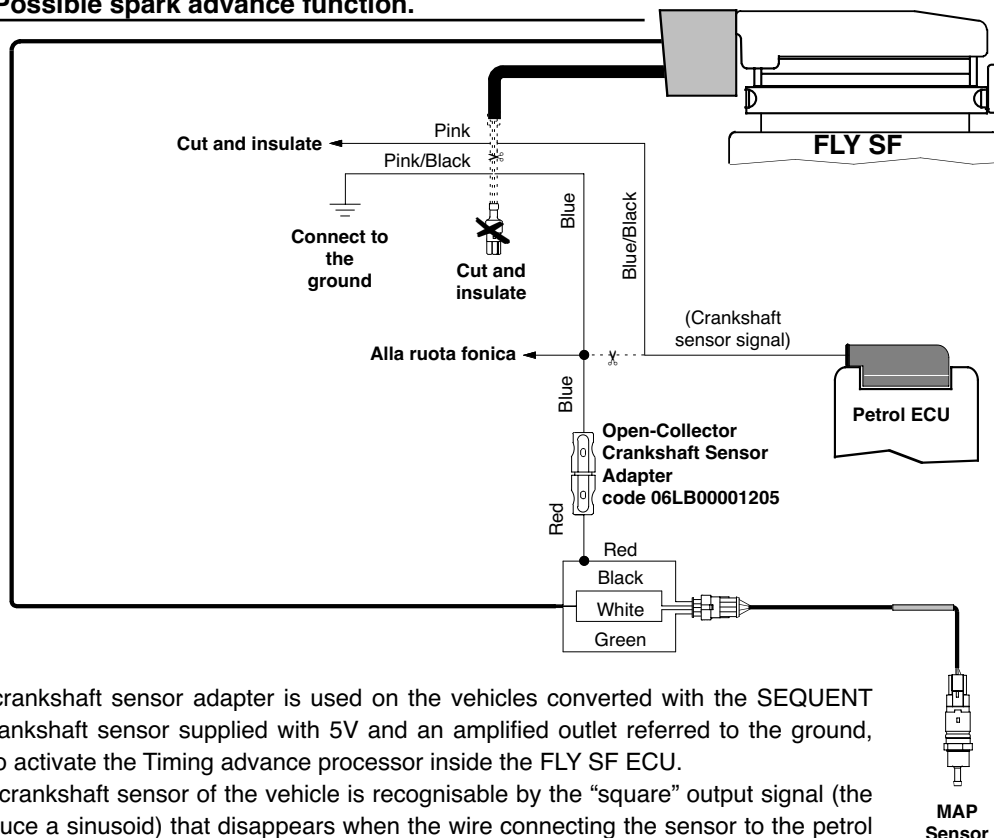


Fig. 02

OTHER POSSIBLE TYPOLOGIES OF CONNECTION REFERRED TO THE CNG SEQUENT FASTNESS WIRING DIAGRAMS

Possible spark advance function.



Application field

The "Open-collector" crankshaft sensor adapter is used on the vehicles converted with the SEQUENT system that have a crankshaft sensor supplied with 5V and an amplified outlet referred to the ground, only if it is necessary to activate the Timing advance processor inside the FLY SF ECU.

This particular type of crankshaft sensor of the vehicle is recognisable by the "square" output signal (the traditional ones reproduce a sinusoid) that disappears when the wire connecting the sensor to the petrol injection ECU is cut.

These sensors are generally assembled on all cars of the Volkswagen group (Audi, Seat, Skoda).

Fig. 03

Possible crankshaft function.

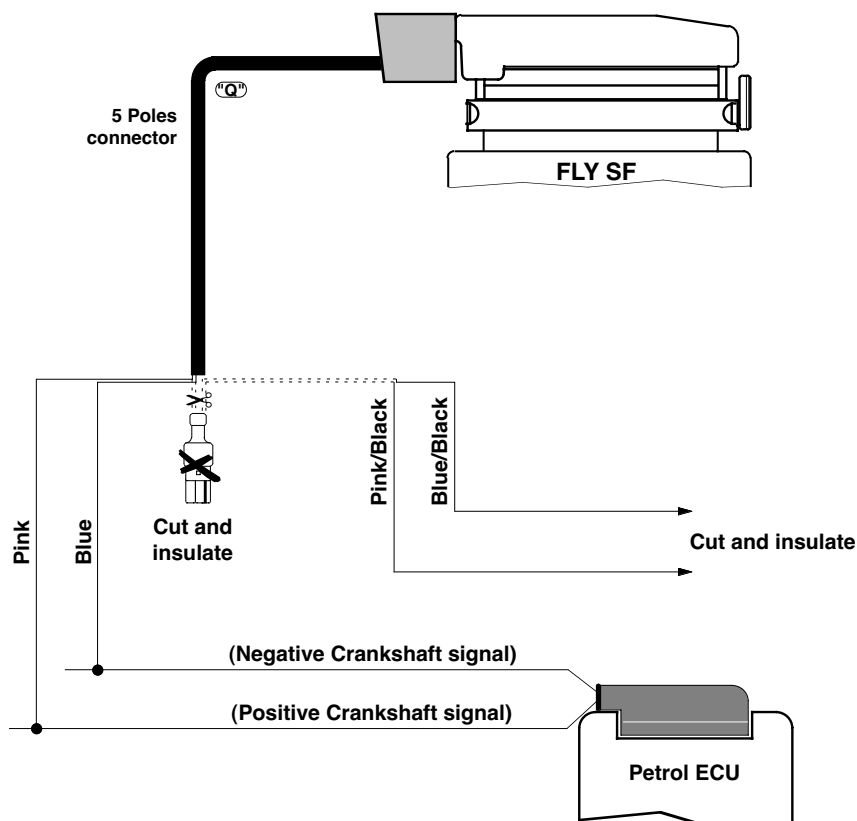


Fig. 04