M&D GROUP

Technical and product information

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Our new catalogues are available

DIESEL · CABLING

MEAT & DORIA SPECIAL PARTS SINCE 1945

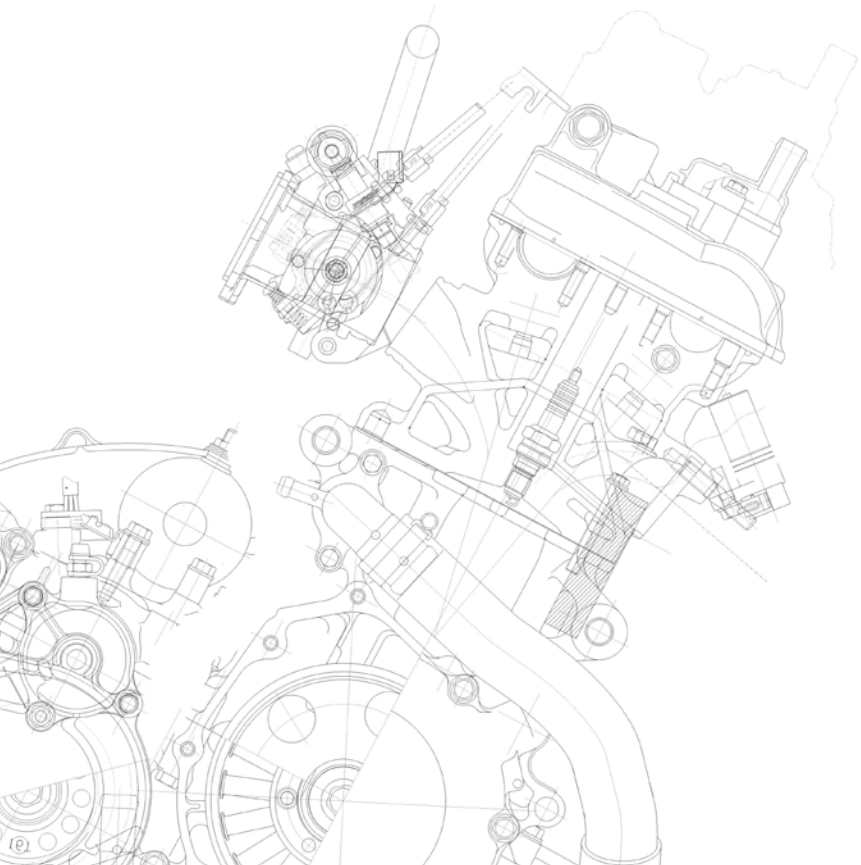
HOFFER PRODUCTS SINCE 1999

Contents of the catalogues:

- An illustrated guide with pictures and technical annotations
- Compatibility details
- Cross tables*

* Only available for the Diesel catalogue

SUMMARY



OVERVIEW

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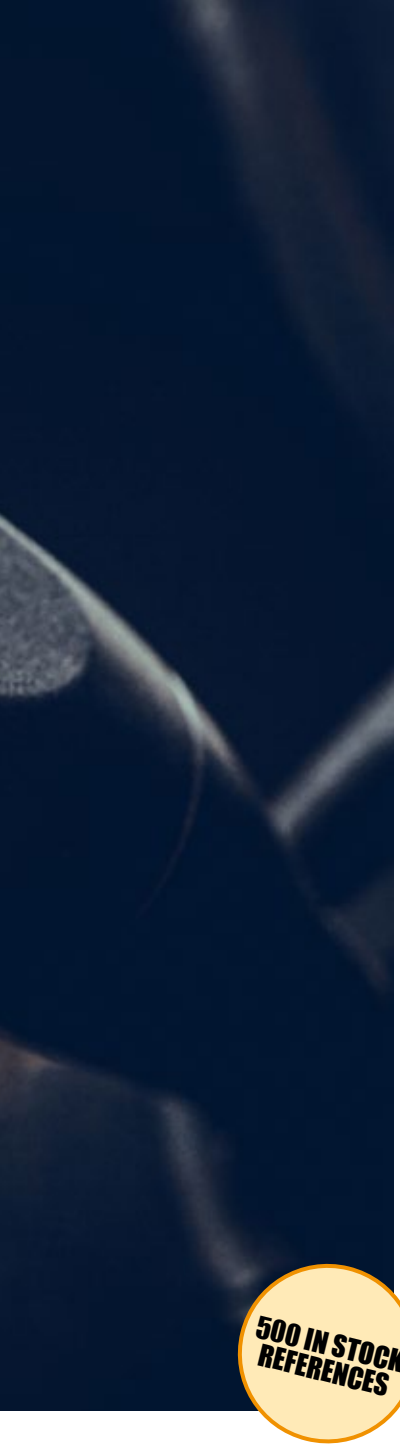
NEWS

The steering column switch: *one* component, *many* commands

> Codified and active references are already available. This availability ensure speed and effectiveness of deliveries to our customers in the Italian market as well as in all the other countries where M&D Group is present.

Meat&Doria code 23761
Hoffer code 2103761



One of the strengths of M&D Group is the ability to adapt to the evolution and the requirements of the market, investing day after day into R&D. All this is aimed at finding novel growth strategies. After thoroughly analyzing the current offer available in the aftermarket, we came to notice a lack in the areas of lighting and comfort. We therefore strategically decided to place our efforts in the development of this sector. During these last months, our Company has indeed invested heavily into the creation of a new family of products, introducing the steering column switch, with the intention of making it a fast-moving product in the medium term. Codified and active references are already available. This availability ensure speed and effectiveness of deliveries to our customers in the Italian market as well as in all the other countries where M&D Group is present.

Our 13.000 m² of storage, at the cutting-edge for technological and logistic solutions, allow real-time managing of orders and their processing in 24 to 48 hours, thus ensuring a 94.6% execution rate. We all know how the steering column switch works: it is a single semi-circular part designed to activate lights, windscreen wipers, the horns and the fog lights. These levers are frequently stressed by the driver, and this is the most probable explanation for their recurring malfunctions and failures. Wear is indeed an ordinary phenomenon that appears on all vehicles with the passing of time and with normal usage. In the case of a failure, replacing the switch is an immediate and fundamental necessity, as the damaged switch may even cause the malfunctioning of the airbag, and consequently jeopardize the safety of the driver and passengers. For that reason, we strongly recommend replacing a broken part instead of repairing it.

But how to disassemble the switch and replace it by a new one? Before operating this substitution, one should consider that, in the factory, the switch is pressure assembled with a soldering of the buttons on the circuit. Therefore, although the operation is not very complicated, following the prescribed steps is a must.

Step by step replacement of the steering column switch

Fiat Grande Punto

1. Straighten the wheel and stop the engine.

2. Disconnect the battery.

3. Deactivate the airbag system and the airbag itself.

4. Remove the casing and the fastening fulcrum to take the steering column switch out; before proceeding, make sure to take out the six screws under the steering wheel with an allen wrench.

5. Pull the lower casing out, as well as the lateral casings that cover both switches.

6. Unscrew the last two screws; in this way it is possible to take out the upper protection casing; this action should not be taken yet.

7. Unscrew the steering wheel, using a torx key.

8. To make the remounting procedure more straightforward, it is useful to mark the reference points inside the wheel with a pencil or a felt-tip. Then pull the steering wheel out.

9. Remove the attachment points underneath, as they might complicate the progress of the operation.

10. Use a hexagonal key to loosen the metal flange holding the outer part of the switch.

11. Extract now the switch and its upper casing.

12. You can now replace the switch and remount it, following this same procedure from bottom to top.

13. Finally, reconnect the battery and start the engine, to assess the right operation of the vehicle.

Lighting and comfort, safety and comfort in the car

Power window switches

M&D Group has been developing yet another product range: the power window switches, that open and close windows, or open, close, and adjust mirrors, operate electric curtains, lock back doors, perform the sequential control of the windows etc.
Because of its exposure to atmospheric agents and its daily usage, a power window switch could get prematurely deteriorated, requiring a swift replacement.

M&D Group is nowadays the only one on the market offering references for the last generation models, such as Alfa Romeo Stelvio or Fiat Tipo, while maintaining all the other references for the FCA models of the last 10-15 years. Furthermore, 2018 will see M&D's range of power window switches increasing even more, exceeding the 350 items available in stock.

Meat&Doria code 26270
Hoffer code 2106270

Reverse light switches

They are small pressure switches that turn the reversing light on when the reverse gear is engaged. This kind of switch is constantly used: just think of how many times the reverse gear of a vehicle is engaged in a day, and then how many times during the whole lifespan of the vehicle. The failure of this switch is very dangerous, as the reversing vehicle is no more signaled; a quick restoration of this function is therefore always necessary.
M&D Group offers a large range of reverse light switches, with about 130 different codes, for vehicles going from the most common ones to all the way to the hardest to come by.

Meat&Doria code 36001
Hoffer code 3600001

Brake light switches

They are also commonly known as "stop lamps", and they have the purpose to send the signal of the braking of the vehicle.
The brake light switch is a safety device that activates the centre brake light and amplifies the rear position lights at the pressure of the brake pedal, notifying the sudden reduction of speed of the vehicle to the other vehicles behind. As for the reverse light switch, the brake light switch is also subject to very frequent use and, for this reason, failures of this component are common and they require an immediate replacement.
M&D Group has now a product range of more than 150 codes for the most known and common vehicles.

Meat&Doria code 35049
Hoffer code 3500049

Hazard light switches

Recently added to the M&D Group product range, these components are made by a contactor that is responsible for the activation of the hazard lights, aka "warnings". It activates and deactivates the flasher relay, and therefore it can be subject to premature wear-out or electrical malfunctioning. **M&D Group technical and R&D departments are currently working on this product range to offer over 50 in stock references during this year, 2018.**

Meat&Doria code 23612
Hoffer code 2103612

Xenon headlight control units

Also called "Ballast", this control unit is part of the lighting system designed to stabilize the power feed coming from the xenon bulbs. The xenon HID technology does not use a 12V battery, as opposed to halogen lights, but reaches peaks of 20 to 30kV.
This voltage is necessary to ionize the gas in the bulb and, consequently, to light the bulb itself: when the vehicle lights are on, the control unit works as voltage regulator, keeping the voltage around 2.2kV.
The switch can exhibit malfunctions even in a newly purchased vehicle, and that will only worsen with time; it can also get damaged through normal usage, from faults in the logical circuit, voltage surges and/or overheating, or oxidation of the wires.
The M&D Group range contains over 60 references of xenon HID light control units, covering most of the applications on the market.

Meat&Doria code 73212667
Hoffer code 7212667

Electric window motor control modules

These components mount onto the electric window motor and they are responsible for all the comfort functions for the electric window: e.g. the anti-pinch protection, or the end-of-stroke detector, for vehicles that miss the top part of their door frame, to ensure that the glass stays within the right limit. Because of the passing of the time or of the poor assembly of the doors, contacts and capacitors could corrode, leading to malfunctions.
M&D Group offers its customers the references for specific models of Renault, Ford and PSA vehicles, that exhibit the most usual and well known faults.

Meat&Doria code 27502
Hoffer code 2107502

Suspension level sensors

These sensors are placed by the vehicles suspensions and are made of a potentiometer that measure a determined position. In this case, the position is the compression or extension of the shock absorber compared to its whole span. The object is to adjust the headlights in a dynamic way, based on the inclination of the vehicle (this can be easily retrieved from the preload of the shock absorber), so as not to dazzle oncoming vehicles. For vehicles with pneumatic suspensions, there is an extra function that instantly measures the vehicle's height.
M&D Group is now on the market for suspension level sensors, with over 20 active references.

Meat&Doria code 38018
Hoffer code 3800018

Door actuators

They are the motors of the locks, allowing to open and close the motorized locks by pressing the key button, putting the key into the keyhole or without any action thanks to the last generation "keyless" technology.
The door actuators are usually controlled by a comfort/security command unit; as each one controls one door, they can follow many different operating routines: opening of only the driver's door, opening of the trunk, child safety lock for the back doors etc. Their failure could happen after an attempt of break-in, or because of atmospheric agents, electric faults, or simply because of the wear of time.
Their replacement is always necessary, otherwise the safety of the passengers could be endangered.
M&D Group will introduce this new range during the year 2018 with two goals: a large choice and an attractive offer.

The most common causes of compressor failures

Nowadays, most cars are equipped with an air conditioning system which, for various reasons, needs very accurate maintenance, performed by qualified staff, both duly trained and licensed to operate. At the core of the circuit, the compressor reduces the coolant to a high-temperature and high-pressure gaseous state, before sending it to the condenser. Being a heat exchanger, the condenser cools down the gas that becomes a high-pressure liquid. Then, the liquid coolant is purified through a filter, before moving to the expansion valve where the high-pressure liquid is turned to a low-pressure vapor, going to the evaporator. The winglets of the evaporator are finally run over by the warm air from the cockpit. The latter is thus cooled by the vaporized coolant through heat exchange.

This compressor has an important influence on the price of the whole air conditioning system; therefore, preserving its lifespan and smooth running is advisable, as most breakdowns come from installation defects that get worse with poor maintenance. Finding and repairing compressor malfunctions is nonetheless rarely an easy task: although the system sometimes makes unusual noises that can help locate the problem, it can also stay stuck without giving any sign of malfunction. Assessing the nature of the noise is a good way to start, since the noise is not necessarily caused by a compressor in need of replacement. Noise can also be linked, for instance, to excessive pressure on the cylinder head, a loose belt, loose or missing temporary bolts, a damaged or frayed drive belt, and so on.

The most evident and usual symptoms of a compressor break-down are:

- Excessive suction pressure (e.g. the pressure at the low-pressure side is too high).
- Low pressure at the cylinder head (e.g. the compressor cannot reduce the pressure at the low-pressure side or it cannot pump up the high pressure).
- Low yield due to a quick decrease to zero of the pressure gradient in the defrosting cycle and impossibility to create a vacuum upon the suction tube closure.

Meat&Doria / Hoffer code K15185A
Krios AC code 1.5185A

• Excessive pressure at the cylinder head, caused either by a coolant refill at the low-pressure side, or by an overload determined by a surplus of coolant in the system.

Even if none of these symptoms appears, it is anyways advisable to perform a check of proper operation at least every 75.000 km, as the bearings could be worn out, etc. Before installing a new compressor, the whole air conditioning system should be thoroughly examined, to ascertain that no faulty part of the system damages the compressor.

We will now analyze the most common and diverse reasons for a possible failure in the compressor, which are:

- **Poor condensation**
- **Feedback of liquid**
- **Low coolant level – with blocked expansion valve and filter-drier**
- **Breaking of the heat protection**

Compressor, clutch or pulley failure

Poor cleansing of the cooling circuit

Poor condensation is caused by:

1. Inner or outer clogging of the condenser (blocked winglets, etc.).

2. An inadequate air flow, which could be due to a malfunctioning electrovalve, a viscostatic friction of the ventilator (incomplete fitting of the engine), or oil and insect remains.

3. A clogged water heater, which can cause the decrease of the airflow inside the condenser and, therefore, a poor heat exchange.

4. Wrong vehicle service procedures (improper idle run time or unfit vacuum pump) or leaks in the suction system causing the impossibility for air or gas to condensate.

5. Contamination of the coolant R314a with mixtures of other coolants. It is recommended to avoid mixing of different coolants and make sure that vacuum state is achieved, especially after a retrofitting or a cleaning.

Feedback of liquid and pressure surge

Since coolants (as well as lubricants) are liquids and therefore they cannot be compressed, they raise to a very high pressure when they get into the compressor on the suction side. This pressure surge can reach very high levels, and cause the premature failure of the blades, the piping, if not the compressor itself.

Low coolant level – blockage of the expansion valve

A low coolant level, a blocked expansion level, or bottlenecks on the passage of the liquid can lead to a progressive loss of functionality of the compressor. This progressive loss can be caused by excessive heating due to insufficient return of cold coolant, i.e. a low coolant level. At the same time, a blocked expansion valve prevents an adequate pumping of the oil, which implies an unnecessary and vain effort from the compressor, eventually causing damage to it.

Heat protection failure.

Heat protection failure inevitably leads to a compressor breakdown; indeed, insufficient or contaminated oil passage generates friction between the metals, that overheats and damages the component. A check of the oil level is recommended, especially if there has been a pipe burst or a restriction (which, of course, need to be eliminated), or if a maintenance operation led to the substitution of one of the components, or if the piping is very long, or if there is a secondary evaporator. If the oil is contaminated, the circuit necessarily needs to be thoroughly cleaned, to avoid a compressor failure.

For a flawless substitution, and to prevent the problem from reappearing in a short time, the following steps are required:

1. Carefully clean the system and remove as much humidity as possible from the circuit, by means of the prolongated vacuum.

2. Replace the components concerned by the accumulation of dirt (the filter-drier and the expansion valve).

3. Be aware of liquid strokes that could damage the compressor during the filling-up.

4. Fill up on the high-pressure side, heating the coolant with the supplied resistor.

5. If possible, always add a filter on the high-pressure side.

6. Pay special attention to the instructions provided by the manufacturer.

7. Before charging the compressor, it is strongly recommended to rotate it several times to properly lubricate the oil shield.

8. Power up the coil wire in bursts with the motor up and running, until the compressor is perfectly lubricated.

9. Use the pressure gauges to verify the system pressure.

10. Verify the correct operation of the circuit, paying attention to the safety devices such as the pressure switch and the thermostat.

KRIOS air conditioning

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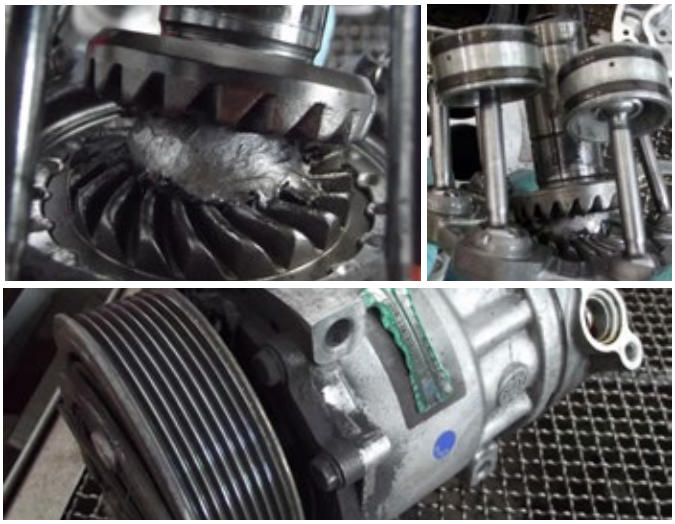
Poor lubrification



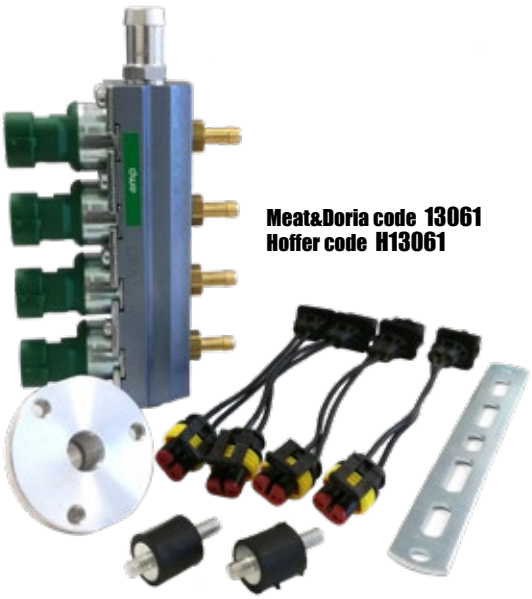
Use of poor quality or non-compliant antileak liquid.

Fill-up of the system on the low-pressure side or liquid overload

FOCUS

Always clean LPG injectors? Now it is possible!

> “Most importantly, our kits do not retain dirt, as opposed to those originally installed by the manufacturer.”



Meat&Doria code 13061
Hoffer code H13061

LPG cars are equipped with injectors designed to allow the right quantity of fuel into the engine. They are located on the suction manifold near the cylinder head, controlled by a dedicated computer. These injectors easily get clogged over time. As the components get more and more filthy, the fuel becomes contaminated. This causes malfunctions, such as an increase of fuel consumption coupled with a decrease in efficiency, the emission of black fumes, ignition difficulties, and possibly leading to sudden stalling at minimum engine revs. Moreover, time and improper maintenance can even lead to total clogging of the injectors.

Performing the cleaning is a mere palliative. Besides being only a stopgap measure for the short term, it does not address the issue in the proper way: indeed, a thorough maintenance operation would require the disassembly and the accurate cleaning of the fuel tank and electro-valve. Since this operation is very dangerous, it is seldom carried out correctly. Therefore, the most straightforward solution is the replacement of the part. To meet the expectations of the market and offer a secure, reliable, and durable product, the technical department of M&D Group has performed serious research to provide thorough and useful solutions.

M&D Group LPG injector kits make sure that our customers will eradicate the problem thanks to these characteristics:

- Global **solidity** of the setup: our rails are made of metal (rather than plastic, as often found in tier one products).
- **Reliability**: M&D Group injectors are self-cleaning, unaffected by inner accumulation of oil.
- **Affordability**: they do not need any kind of electronic adaptation.
- **Simple installation**: the setup is easy and immediate.
- **Applicability**: the M&D Group injector kit suits all 2, 3 or 4-cylinder FCA petrol engines.
- **Compliance**: our kits are type-approved for both LPG and CNG.

Our kits are expressly designed to replace tier one LPG installations on FIAT vehicles. Most importantly, they do not retain dirt, as opposed to those originally installed by the manufacturer.
M&D Group LPG injector kits include the injectors, brackets for the original pressure sensors, cables, clamps for the correct assembly, as well as silent blocks.

Step-by-step substitution of the injector rail

1 Original rail

2 Fixation of the anti-vibration mounts

3 Installation of the pressure sensor

4 Connection of the piping

5 Connection of the electrical components

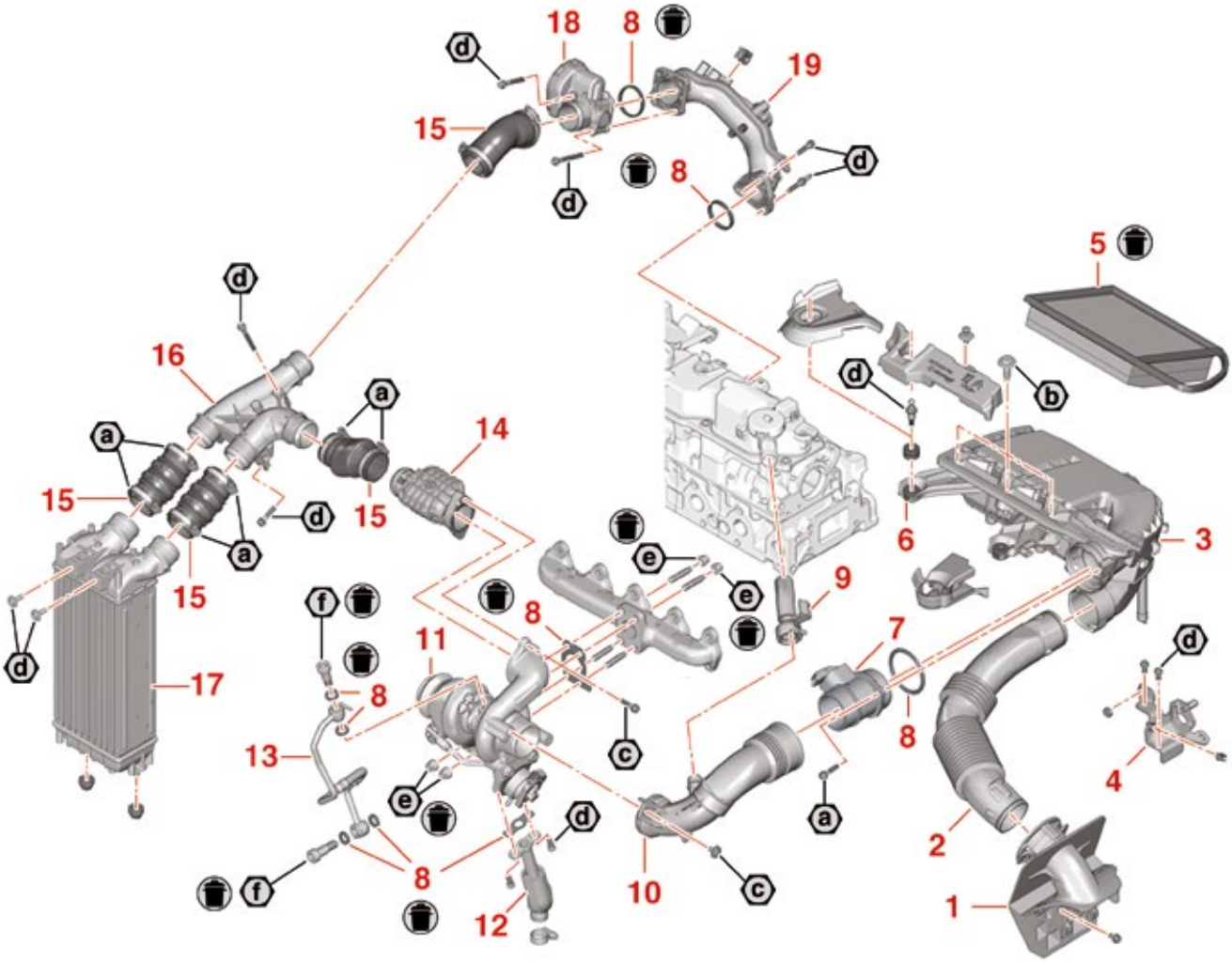
6 Correctly installed manifold

Peugeot Partner II 1.6 HDi 75/95 HP since 02/2012

REPAIR METHODS

THIS PROCEDURE IS PROVIDED BY INFOPRO DIGITAL AUTOMOTIVE

AIR INTAKE CIRCUIT



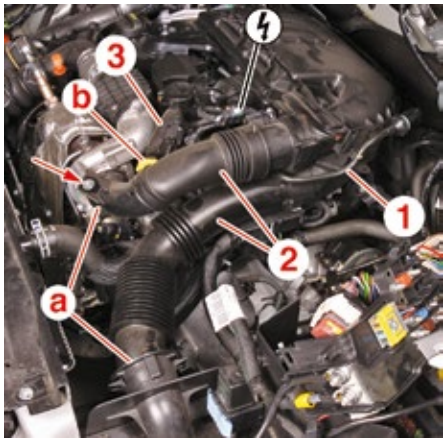
1. Air inlet
2. Air channel
3. Air filter case
4. Air filter case socket
5. Air filter
6. Silent block
7. Mass flow sensor
8. Gasket
9. Suction sleeve for the oil fumes
10. Turbocharger air intake pipe
11. Turbocharger
12. Turbocharger oil feedback pipe
13. Turbocharger oil intake pipe
14. Noise dampener
15. Sleeve
16. Supercharging air pipe
17. Air-to-air intercooler
18. Engine positioner
19. Air intake connection pipe

a. 0,3 daN.m
b. 0,5 daN.m
c. 0,7 daN.m
d. 0,8 daN.m
e. 2,6 daN.m
f. 3 daN.m

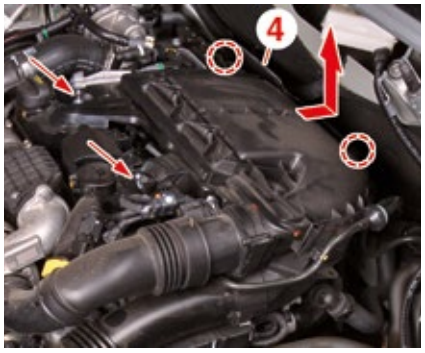
DISCONNECTION-RECONNECTION OF THE AIR FILTER

Disconnection

- Disconnect the battery.
- Without disconnecting the pipes, move the brake liquid tank.
- Unplug the vacuum pipe **(1)** (Pic. 22).
- Separate:
  - the air pipes **(2)** at the end marked **(a)** on the sketch,
  - the oil vent **(3)** at the end marked **(b)**.
- Remove the heat protection **(4)** from the air filter case (Pic. 23).
- Remove the air filter case by moving it backwards.



Pic. 22



Pic. 23

Reconnection

- To reconnect, follow the same procedure from bottom to top.

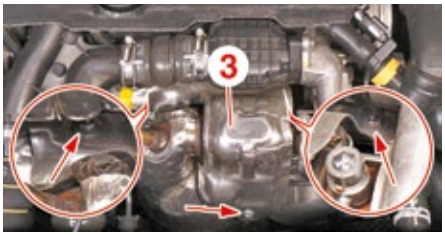
DISCONNECTION-RECONNECTION OF THE TURBOCHARGER

Disconnection

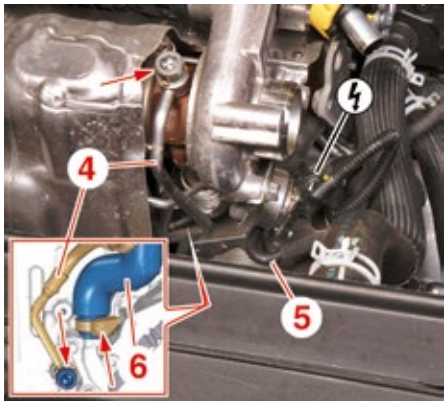
- Disconnect:
  - the air pipes **(1)** (Pic. 24),
  - the noise dampener **(2)**,
  - the oxygen sensor.

Pic. 24

- Remove the heat protection **(3)** (Pic. 25).
- Disconnect the oil pipe **(4)**, (Pic. 26).
- Disconnect:
  - the sleeve **(5)**,
  - the air pipe **(6)** (Pic. 26).

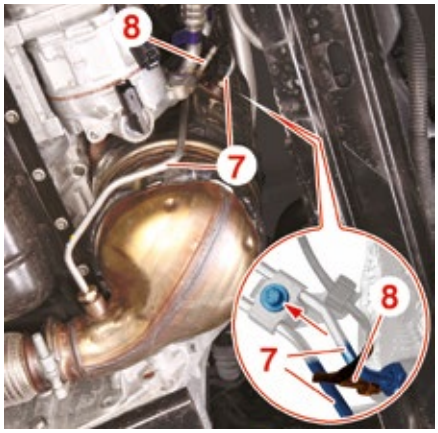


Pic. 25



Pic. 26

- Move (Pic. 27):
  - the piping **(7)**,
  - the probe **(8)**.

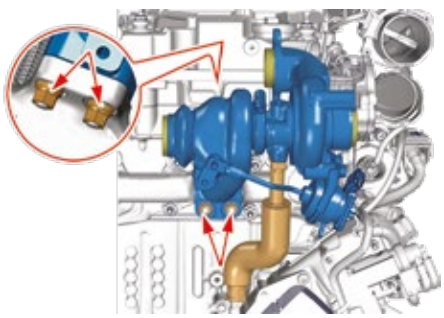


Pic. 27

- Detach the particle filter/catalytic converter (Pic. 28).


Pic. 28

- Detach the turbocharger (Pic. 29).


Pic. 29

Reconnection

- To reconnect, follow the same procedure from bottom to top.
- Be mindful of the following details:
  - Premount the turbocharger and the particle filter/catalytic converter kit before definitively putting everything together again.
  - Apply water and soap on the exhaust gas temperature probe's cable.
  - The rod **(a)** of the upper oil intake pipe must rest on the air intake turbine (Pic. 30).
  - Set the Ø 10 mm rod **(b)** by the lower joint and tighten the joints.
- Before starting, follow the following instructions:
  - Unplug the injector connectors.
  - Trigger the starter for 15 seconds.
  - Plug the injector connectors in again.
  - Start the engine and let it run for at least 30s before accelerating.
  - Make sure the connections are hermetically sealed.
  - Delete the saved errors with a diagnostic tool.

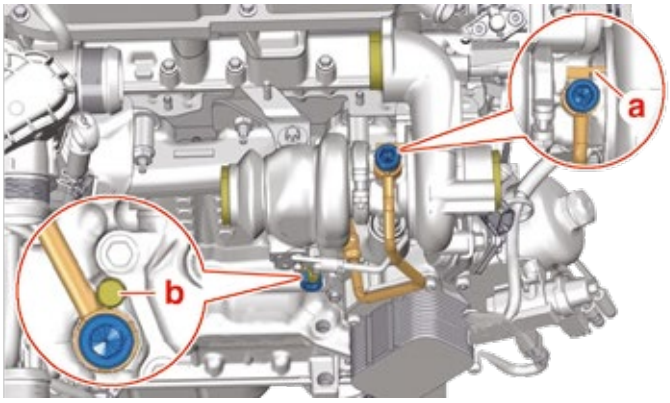
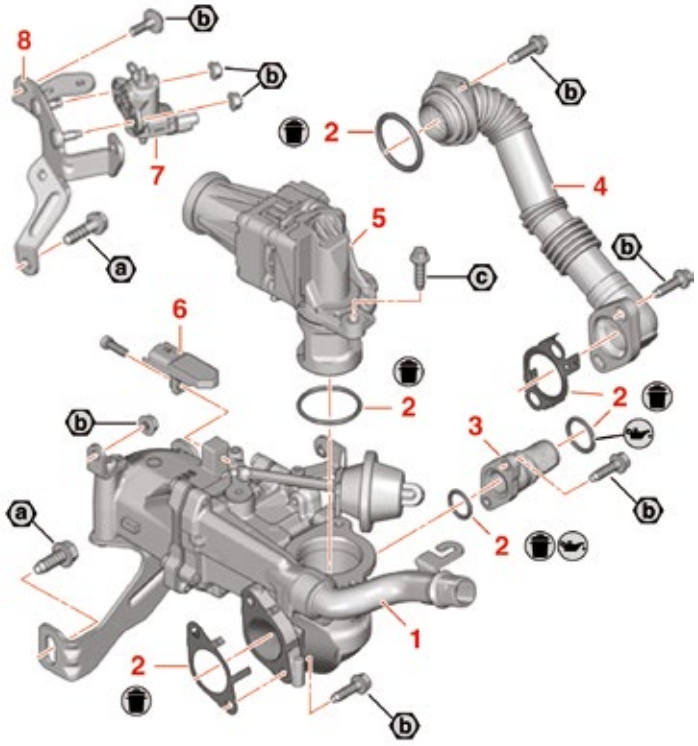


Fig. 30

ANTIPOLLUTION AND EXHAUST CIRCUIT



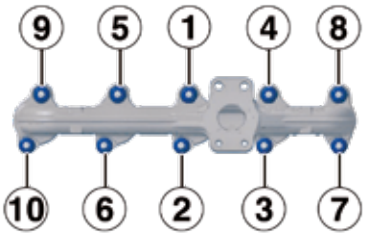
1. Module for reusing exhaust gasses
2. Joint
3. Connection
4. Circuit
5. EGR valve
6. Sensor of the position of the actuator for the cooling of the reused gasses
7. Electrovalve for cooling reused gasses
8. Support for the electrovalve for cooling reused gasses

a. 2 daN.m
b. 0,8 daN.m
c. 1 daN.m

DISCONNECTION-RECONNECTION OF THE EXHAUST MANIFOLD

Important details for reconnection

- Fix the part in the following order (Pic. 31)

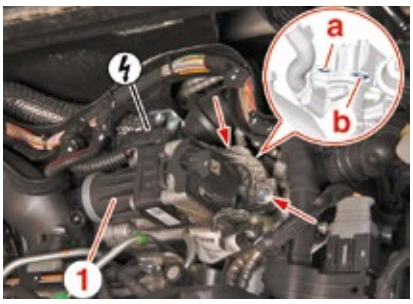


Pic. 31

DISCONNECTION-RECONNECTION OF THE EGR VALVE

Disconnection

- Remove the air filter casing (refer to corresponding operation).
- Separate the vacuum pump's depression connections.
- Dismantle the EGR valve **(1)** with a screwdriver as for **(a)** and **(b)** (Pic. 32).



Pic. 32

Reconnection

- To reconnect, follow this procedure from bottom to top.
- Check the EGR valve with a diagnostic tool.

DISCONNECTION-RECONNECTION OF THE EGR COOLER

The egr cooler cannot be separated from the EGR module.

Disconnection

- Purge the cooling circuit (refer to corresponding operation).
- Disconnect:
  - the air filter casing (refer to corresponding operation),
  - the noise dampener behind the engine,
  - the front exhaust pipe,
  - the battery casing.
- Move aside:
  - the vacuum pump's depression connectors,
  - the protection **(1)** for the glow plugs' power supply harness (Pic. 33).
- Detach the air filter support **(2)**.

Pic. 33

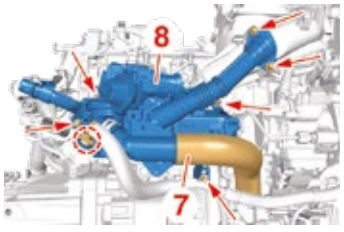
- Disconnect the sleeves **(3)** (Pic. 34).

Pic. 34

- Move the power supply harness protection **(4)** aside (Pic. 35).
- Unplug the connection **(5)**.
- Move aside the depression circuit pipes connection **(6)**.

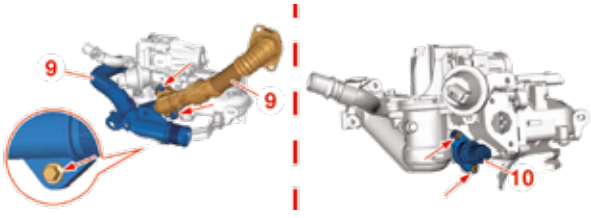
Pic. 35

- Detach the sleeve **(7)** (Pic. 36).
- Move the cable bundle.
- Detach the EGR module **(8)**.



Pic. 36

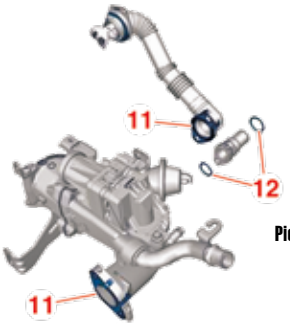
- At the engine bench, disconnect (Pic. 37):
  - the piping **(9)**,
  - the connection **(10)**.



Pic. 37

Reconnection

- To reconnect, follow the same procedure from bottom to top.
- Be mindful of the following details:
  - Keep the positioning of the joint fixation rods **(11)** (Pic. 38).
  - Lubricate the joints with engine oil **(12)**.



Pic. 38

Emissions and pollution, the ultimate frontier

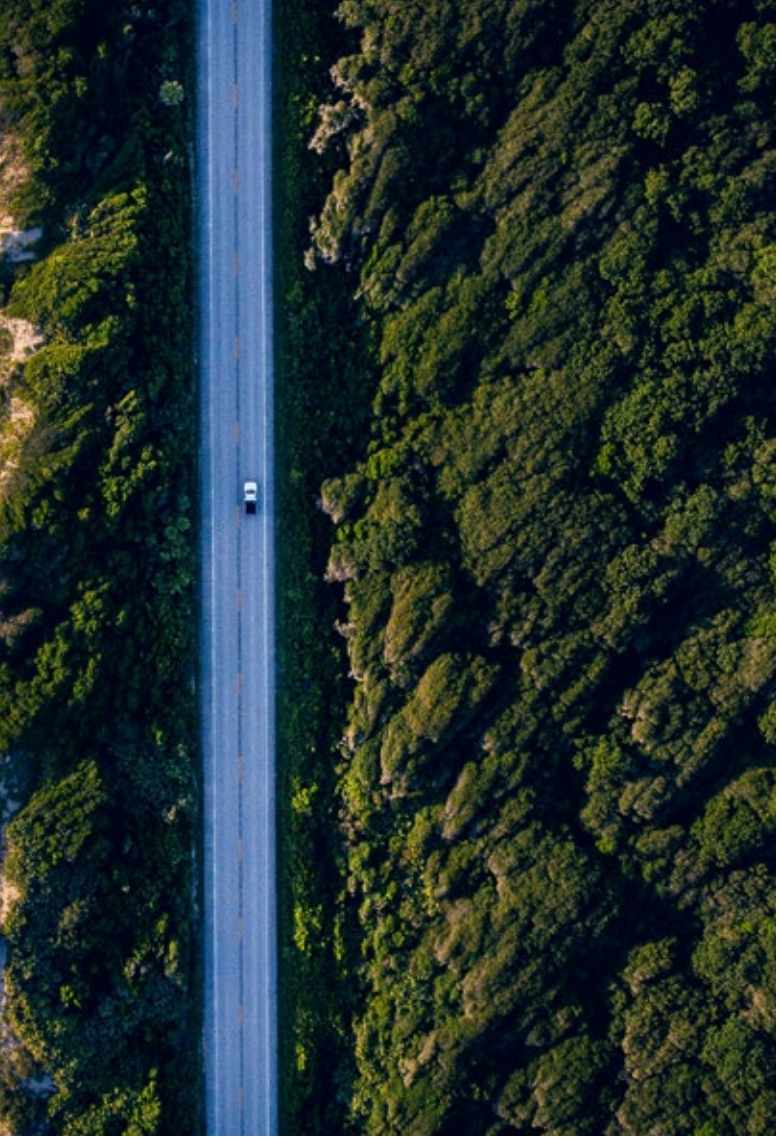
> Euro 6d will become compulsory for cars registered as from Sept 2019. Pollutants will be measured according to the RDE cycle.

Meat&Doria code 1950
Hoffer code H1950

The latest anti-pollution regulations have introduced the new Euro 6c diesel homologation, that took effect in Sept 2017, bringing little change as opposed to the previous standards. With the first of its two phases, called TEMP, Euro 6d will become compulsory for cars registered as from Sept 2019. Pollutants will be measured according to the **Real Driving Emissions (RDE)** cycle (replacing the previous NDEC cycle), and CO_2 emissions will be assessed thanks to the new **WLTP (Worldwide harmonized Light vehicles Test Procedures)**, in force since Sept 1st, 2017. All these novelties, as part of the European directives about polluting emissions, have determined an evolution in finding innovative systems that would reduce harmful emissions even more.

The **fuel vapour valve** was designed exactly for that purpose, and it can be fit into the last generation Ford, PSA, and FCA models. This injector was designed and put into the market as an alternative to the classical DPF, that is based on urea injection. This system works with the introduction of a small quantity of fuel into the exhaust gas post treatment circuit; this fuel is then vaporised by the spark plugs.

When necessary, the ECU activates this fuel vapour valve that introduces the fuel-mist at the end of the catalytic converter. This generates an increase in tem-



perature and allows an easier conversion of the nitrogen oxides into inoffensive gases such as nitrogen, carbon gas, or water. The whole process is automatically activated when it is necessary to perform forced regeneration or when the temperature of the exhaust pipe is too low. Just as any other component in which fuel flows, the fuel vapour valve is liable to ordinary problems. First and foremost is the accumulation of dirt, which, in the long run, can lower efficiency or, at the worst, completely clog up the injector, compromising the whole system. This causes the stop of the DPF regeneration strategies and the activation of the recovery mode.

M&D Group is constantly searching for new niche markets, and has therefore developed its own range of products by introducing these valves and offering their most successful references right away.

Main error codes

Error code	Concerned component	Description of anomaly
P20CB	Post-treatment of exhaust gas - Fuel A injector	Functional disurbance
P20CB00	Post-treatment of exhaust gas - Fuel A injector	Interruption
P20CC	Post-treatment of exhaust gas - Fuel A injector	Functional disurbance
P20CC4B	Post-treatment of exhaust gas - Fuel A injector	Excessive temperature
P20CD	Post-treatment of exhaust gas - Fuel A injector - Control circuit	Functional disurbance
P20CD00	Post-treatment of exhaust gas - Fuel A injector - Control circuit	Interruption / Connection to ground
P20CE	Post-treatment of exhaust gas - Fuel A injector - Control circuit	Functional disurbance
P20CE00	Post-treatment of exhaust gas - Fuel A injector - Control circuit	Interruption / Short circuit at positive
P2032	Exhaust temperature sensor 2	Functional disurbance
P203200	Exhaust temperature sensor 2	Signal too weak
P2033	Exhaust temperature sensor 2	Functional disurbance
P203300	Exhaust temperature sensor 2	Signal too high
P2080	Exhaust temperature sensor 1	Functional disurbance
P208023	Exhaust temperature sensor 1	Signal lower than expected
P208024	Exhaust temperature sensor 1	Signal higher than expected
P2081	Exhaust temperature sensor 1	Functional disurbance
P208100	Exhaust temperature sensor i	Functional disurbance
P2084	Exhaust temperature sensor 2	Functional disurbance
P208423	Exhaust temperature sensor 2	Signal lower than expected
P208424	Exhaust temperature sensor 2	Signal higher than expected
P2085	Exhaust temperature sensor i	Functional disurbance
P208500	Exhaust temperature sensor i	Occasional breakdown

FOCUS

An *electrical* information transfer

The electronic vehicle control is essential for the correct operation of the vehicle; it is therefore important for all the different components to communicate properly, with constant reliability. This communication is guaranteed by the cable harness, a sort of highway allowing the transmission of a very large quantity of data and electrical signals; this information then follows "secondary routes" that connect components either electrically or electronically actuated.

The cable harness is therefore obviously crucial to the correct functioning of the components and to the safe transit of information in the whole vehicle. It consists in a series of cables, terminals and connectors that run throughout the vehicle, carrying information and electric energy to the different ends of the automobile. The components are identified by their code, manufacturer and vehicle model, but what really differentiate them is their mounting setup (for instance, right, or left door), or other details (e.g. connectors sealed with 12 wires), and technical features such as the length and number of cables. Another distinctive detail of these cables is their different colours. As all other motorcar parts, even these cable harnesses can be subject to malfunctions or breakdowns. Inconveniences such as mechanical stressing, friction, unnatural bending, excessive temperature variation, atmospheric agents or simply normal wear extended in time, can lead to their deterioration and make their replacement necessary. Changing the whole bundle of cables for the entire car is a rather laborious undertaking, as most of the vehicle must be taken apart. Undertaking its quest for constant customer satisfaction, M&D Group offers kits that can adapt to the whole cable harness and, depending on which part is concerned with a problem, allow a drastic cut on repair time and consequently on the cost of the operation. In line with the most demanding requirements and regulations, our kits are designed with thermoresistant cladding and silicone sheaths that guarantee not only an extreme flexibility, but also a considerably larger lifespan than PVC, and therefore a smaller risk of deterioration and a longer duration once the replacement is performed.

Consisting of around 400 references for cable harness kits, the M&D Group range includes lighting groups, door and trunk connectors, air conditioning systems, water pipes, and repair kits for the other parts of the vehicle. Thanks to this new range, M&D Group covers over 90% of the European car population.

25261 Kit riparazione cablaggio / *Wiring repair kit* 8035261

Opel Astra H

Porta posteriore / *Rear door*
Open+Start - Cablaggio con soffietto - *Wiring with bellows*
L=200mm 15 cavi - *wires*

M&D GROUP ISSUED AN EXHAUSTIVE CATALOGUE THAT IS EASY TO BROWSE THROUGH

M&D Group repair kits

Assortments for common rail injectors and quick-connect couplings.
A collection of several products that can be replaced separately.
They include copper, steel and brass washers, clamps and fittings.
The fixing-washers are mounted at the base of the injector. They need to be replaced each time the injectors are taken apart, to ensure their correct operation.

9161 - 8029161

For ***Bosch Delphi*** common rail injectors

MEAT&DORIA HOFFER	DESCRIPTION	PCS
9162 - 8029162	Copper washer 7,3x13,6x2 - Kia	50
9163 - 8029163	Copper washer 7,3x13,6x3 - Kia	50
9164 - 8029164	Copper washer 7,5x16,5x2 - Sprinter	50
9165 - 8029165	Copper washer 7,5x15,5x1 - Man, Rover	50
9166 - 8029166	Copper washer 7,5x15,5x1,5 - Ulysse	50
9167 - 8029167	Copper washer 7,5 x13,5x1,5 - Focus	50
9168 - 8029168	Copper washer 7x13x1,5 - Deutz	50
9169 - 8029169	Copper washer 7,5x13x3 - Scenic	50
9170 - 8029170	Copper washer 7,5x15,5x1,5 - Land Rover	50
9171 - 8029171	Copper washer 7,5x15,5x2,5 - Fiesta	50
9172 - 8029172	Copper washer - Mazda	12
9173 - 8029173	Copper washer 8X15,45X2 (grooved bushing)	12
9174 - 8029174	Copper washer 7,5x15x2 (bushing with nosings) - Iveco, Ford, Bmw, Man	50

MEAT&DORIA HOFFER	DESCRIPTION	PCS
9175 - 8029175	Copper washer 7,5x15x1,5 (bushing with nosings) - Tector, Ford, Bmw, Man	50
9176 - 8029176	Copper washer 7,5x13x2,5 (bushing with nosings) - Megane	50
9177 - 8029177	Copper washer 7x15x1,5 (grooved bushing) - Mercedes	50
9178 - 8029178	Copper washer 7x15x1,5 (grooved bushing) - Bombata, Fiat	50
9179 - 8029179	Steel washer 6x10x1	50
9180 - 8029180	Brass washer B.I. VW	20
9181 - 8029181	Steel ring for B.I. VW	20
9182 - 8029182	Spring to fix CR injector	10
9048 - 8029048	Diesel pipe fitting (1-way)	25
9049 - 8029049	Diesel pipe fitting (2-way)	30

9716 - 8029716

For ***Bosch Siemens Denso*** common rail injectors

MEAT&DORIA HOFFER	DESCRIPTION	PCS
9216 - 8029216	Copper washer 7,4x14x2 - Siemens, Ford Focus	10
9217 - 8029217	Copper washer 7x15x1,5 - Siemens, Peugeot 307	10
9218 - 8029218	Copper washer 7x16x2,5 - Siemens, Ford Fusion	10
9598 - 8029598	Copper washer - Bosch F00RJ02175, Man	10
9387 - 8029387	Steel washer 7,7x16,2x2,2 - Transit	10
9705 - 8029705	Copper washer 7x15x1,76 - Daimler	10
9706 - 8029706	Copper washer 7,3x16x1,5 - 1.6 TDCi	10
9707 - 8029707	Copper washer 7,1x13,7x2,5 - Tata	10
9708 - 8029708	Steel washer 7,1x13,7x1,6 - Transit	10
9709 - 8029709	Copper washer 7,1x13,7x2,25 - Ford Kuga	10
9710 - 8029710	Copper washer 7,7x15x1,5 - Land Rover	10
9711 - 8029711	Copper washer 7,1x13,7x1,6 - Ford Connect	10
9712 - 8029712	Copper washer 7,1x15x1,6 - Alfa Romeo MiTo	10

MEAT&DORIA HOFFER	DESCRIPTION	PCS
9713 - 8029713	Copper washer 7,1x15,5x2,5 - 1.4 TDCi	10
9714 - 8029714	Copper washer 7,4x16,4x2 - Berlingo	10
9715 - 8029715	Copper washer 7,3x16,3x2 - Toyota	10
9399 - 8029399	Diesel pipe fitting (2-way) - Denso, Isuzu	3
9400 - 8029400	Diesel pipe fitting (1-way) - Denso, Isuzu	1
9401 - 8029401	Diesel pipe fitting (1-way) - Siemens	1
9402 - 8029402	Diesel pipe fitting (2-way) - Siemens	1
9403 - 8029403	Diesel pipe fitting (2-way) - Siemens a T	2
9404 - 8029404	Diesel pipe fitting (2-way) - Siemens a V	2
9405 - 8029405	Diesel pipe fitting (2-way) - Siemens	1
9213 - 8029213	Spring to fix CR injector - Siemens	5
9214 - 8029214	Spring to fix CR injector - Siemens	5
9215 - 8029215	Spring to fix CR injector - Siemens	5

KIT05 - 7506K05

Set of quick-connect couplings

MEAT&DORIA HOFFER	DESCRIPTION	PCS
QC1 - 7506QC1	Female quick connector of 7.89 mm, 180°	2
QC2 - 7506QC2	Female quick connector of 7.89 mm, 90°	2
QC3 - 7506QC3	Female quick connector of 7.89 mm, white O-ring, 180°	2
QC4 - 7506QC4	Female quick connector of 7.89 mm, white O-ring, 90°	2
QC5 - 7506QC5	Female quick connector of 7.89 mm, 180°	2
QC6 - 7506QC6	Female quick connector of 7.89 mm, 90°	2

MEAT&DORIA HOFFER	DESCRIPTION	PCS
QF1 - 7506QF1	Female quick connector of 9.89 mm, 180°	2
QF2 - 7506QF2	Female quick connector of 9.89 mm, 90°	2
QE1 - 7506QE1	Male end-piece of 6,3 mm	2
QE2 - 7506QE2	Male end-piece of 7,89 mm	2
QE4 - 7506QE4	Male end-piece of 7,89 mm	2
QE7 - 7506QE7	Male end-piece of 9,49 mm	2

PARTS

Our range

ENGINE MANAGEMENT

Over **2000** ref.

- Idle speed controls ▸ **95** ref.
- Relays and component ▸ **140** ref.
- Injectors ▸ **120** ref.
- Electronic control units ▸ **85** ref.
- Throttle bodies ▸ **380** ref.
- Cohline ▸ **74** ref.
- LPG / CNG ▸ **90** ref.
- Pressure regulators ▸ **35** ref.
- Electrical small parts ▸ **430** ref.
- Mechanical small parts and kits ▸ **150** ref.
- Cable harness kits ▸ **420** ref.

EMISSION CONTROL

Over **1300** ref.

- EGR valves ▸ **550** ref.
- Mass airflow meters ▸ **430** ref.
- Mass airflow insert ▸ **95** ref.
- Electrovalves ▸ **190** ref.
- Air pump and valves ▸ **47** ref.
- Fuel vapour valves ▸ **11** ref.

IGNITION COILS AND MODULES

Over **580** ref.

- Ignition coils ▸ **550** ref.
- Ignition modules ▸ **30** ref.

LIGHTING AND COMFORT

Over **1000** ref.

- Brake light switches ▸ **155** ref.
- Reverse light switches ▸ **130** ref.
- Hazard light switches ▸ **26** ref.
- Power window switches ▸ **95** ref.
- Steering column switches ▸ **500** ref.
- Level sensors ▸ **21** ref.
- Xenon light control units ▸ **61** ref.
- Door lockers ▸ ***Available soon***
- Regulation module for power window motors ▸ ***Available soon***

FUEL PUMPS

Over **1800** ref.

- Fuel supply units ▸ **980** ref.
- Fuel pumps ▸ **230** ref.
- Mechanical fuel pumps ▸ **210** ref.
- High pressure pumps ▸ **28** ref.
- Fuel level sensors ▸ **250** ref.
- Fuel pump accessories ▸ **110** ref.

TURBOCHARGERS

Over **850** ref.

- Turbo cartdriges ▸ **400** ref.
- Variable geometries ▸ **30** ref.
- Recirculating air valves ▸ **10** ref.
- Oil pipes for turbocharger ▸ **88** ref.
- Turbochargers gaskets ▸ **270** ref.
- Turbochargers ▸ **62** ref.
- Wastegates ▸ ***In arrivo***

ELECTRIC PARTS

148 ref.

- Electric water pumps ▸ **148** ref.

VACUUM PUMPS

Over **180** ref.

- Vacuum pumps ▸ **175** ref.
- Vacuum pumps accessories ▸ **7** ref.

STARTER SYSTEM

Over **680** *ref.*

- Pulleys ▸ ***200*** *ref.*
- Starterdrives ▸ ***220*** *ref.*
- Electromagnets ▸ ***260*** *ref.*

MECHANICAL PARTS

Over **460** *ref.*

- Oil coolers ▸ ***240*** *ref.*
- Oil valves ▸ ***60*** *ref.*
- Camshaft phaser solenoid valves ▸ ***67*** *ref.*
- Steering pumps repair kits ▸ ***100*** *ref.*

COOLING SYSTEM

Over **600** *ref.*

- Thermostats ▸ ***495*** *ref.*
- Water flanges and hoses ▸ ***105*** *ref.*
- Water hose ▸ ***Available soon***
- Thermal systems ▸ ***10*** *ref.*
- Oil hose ▸ ***Available soon***
- Air hose ▸ ***Available soon***

SENSORS

Over **3600** *ref.*

- Kock sensors ▸ ***135*** *ref.*
- Throttle position sensors ▸ ***70*** *ref.*
- Acceleration pedal sensors ▸ ***90*** *ref.*
- Camshaft and crankshaft sens. ▸ ***820*** *ref.*
- Torque sensors ▸ ***18*** *ref.*
- Pressure sensors ▸ ***262*** *ref.*
- Parking sensors ▸ ***138*** *ref.*
- Oil level sensors ▸ ***24*** *ref.*
- Exhaust gas pressure sensors ▸ ***60*** *ref.*
- Temperature sensors ▸ ***375*** *ref.*
- ABS sensors ▸ ***830*** *ref.*
- Fuel pressure sensors ▸ ***26*** *ref.*
- Oil pressure switches ▸ ***51*** *ref.*
- Exhaust gas temp. sensors ▸ ***625*** *ref.*

Also available

- Brake booster press. sens. • NO_x sens.
- Pedal stroke sensors • TPMS sens.

OXYGEN SENSORS

Over **580** *ref.*

- Oxygen sensors ▸ ***553*** *ref.*
- Universal oxygen sensors ▸ ***26*** *ref.*

DIESEL PARTS

Over **400** *ref.*

- Common rail pressure sensors ▸ ***66*** *ref.*
- Common rail press. regulators ▸ ***110*** *ref.*
- Other ▸ ***250*** *ref.*

AIR CONDITIONING

Over **2350** *ref.*

- Control valves ▸ ***51*** *ref.*
- Viscous fan drives ▸ ***17*** *ref.*
- Pressure switches ▸ ***67*** *ref.*
- Viscous clutches ▸ ***54*** *ref.*
- Expansion valves ▸ ***140*** *ref.*
- Compressors ▸ ***1300*** *ref.*
- Dryer filters ▸ ***250*** *ref.*
- Cabin fans ▸ ***191*** *ref.*
- Resistors and regulators ▸ ***210*** *ref.*
- Actuators ▸ ***52*** *ref.*

FILTERS

Over **2000** *ref.*

CARBURETTOR KITS

430 *ref.*

NEWS

The steering column switch:
one component, *many* commands

A/C SYSTEM

The most common causes of
compressor failures

MARKET

Emissions and pollution,
the ultimate frontier

GARAGE

Repair methods: Peugeot
Partner II

M&D GROUP

Technical and product information

OVERVIEW

MEAT & DORIA SPECIAL PARTS SINCE 1945

KRIOS air conditioning

HOFFER PRODUCTS SINCE 1999

www.meat-doria.com
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