



Technical and product information



OVERVIEW



NEWS

Turbo, the future is already here



A/C SYSTEM

Cabin fan: operation and causes of malfunctioning



GARAGE

Repair methods:
Nissan Juke



MARKET

Automatic shift: between history and evolution

The new websites are online

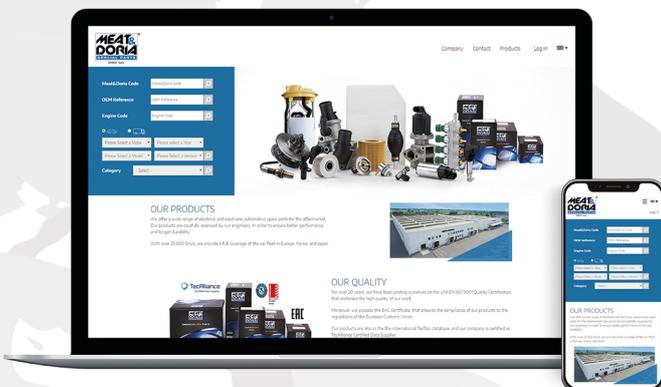
New look and new functions are waiting for you!



SINCE 1945



SINCE 1999



www.meat-doria.com



www.hoffer-products.com

NOVELTIES

- New design
- A website for each brand
- Evolved user experience
- Optimised browsing for all devices

NEW FUNCTIONS

- Fast Order
- Web Service to generate orders and download bills and invoices automatically
- Feedbacks on handling returns and order status

NEW SEARCH

Now it is possible to search for items through the engine code and characteristics for products of standard categories.

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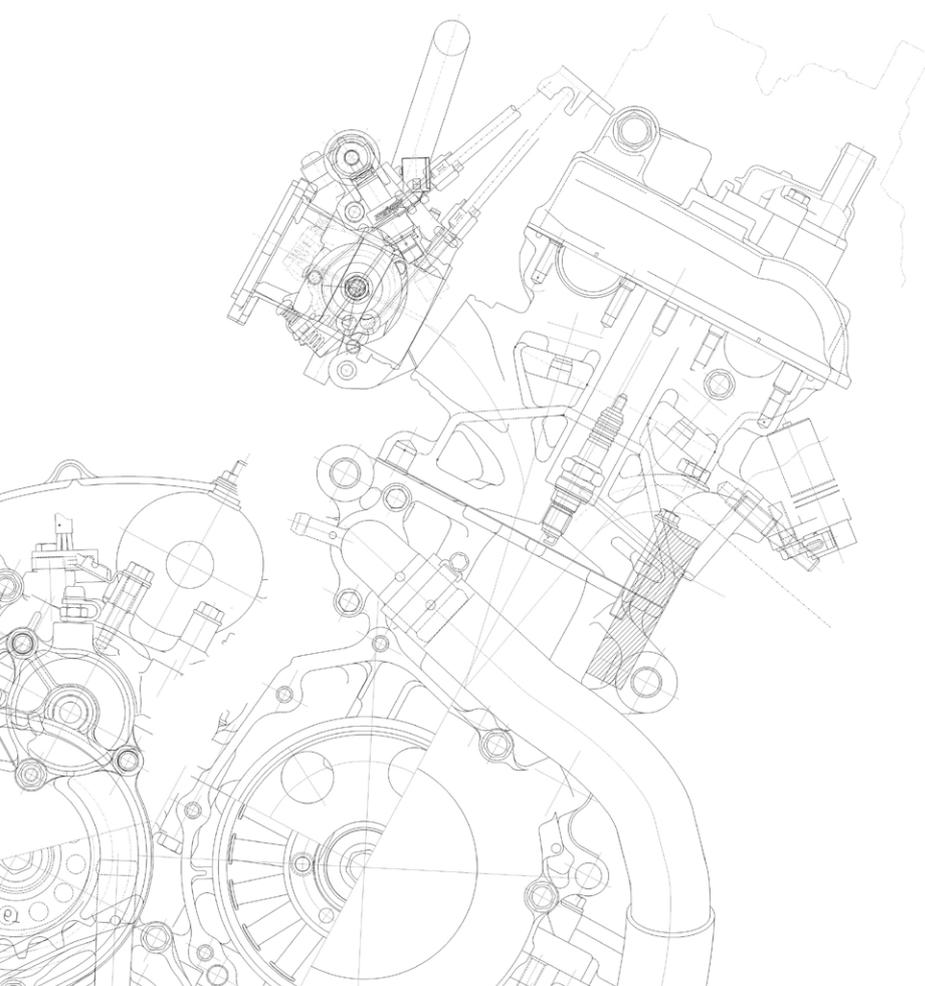
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OVERVIEW

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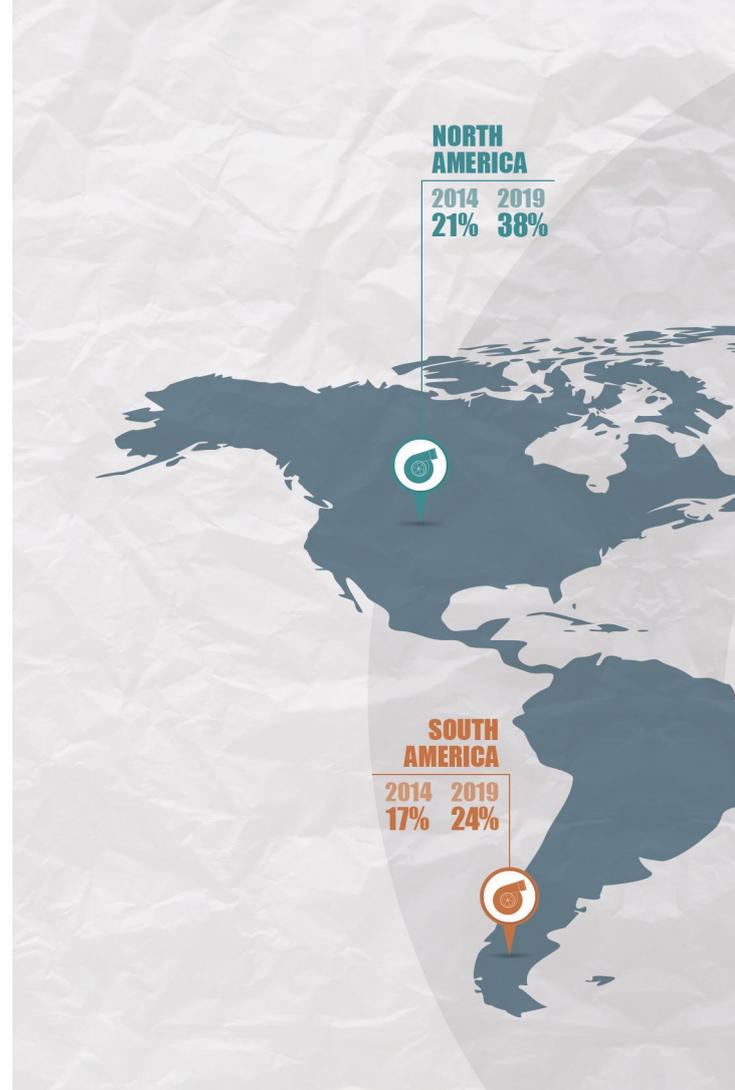
NEWS

TURBO, the future is already here

“ In addition to the bigger production of vehicles equipped with turbo-charger, playing a key role in this market is essential. ”



Meat&Doria: 65007
Hoffer: 690007



The *downsizing* phenomenon has advantages not only in terms of a more compact engine, with consequent overall lightening of the vehicle and reduction of inertia, and also with regards to performances, thanks to the greater torque and reduction of emissions and consumptions. The main component is the turbocharger, which is becoming more and more sophisticated and efficient and is growing in its market at international level.

Some interesting characteristics:

- **The use of diesel is destined to decrease:** the higher pollution in our cities due to thin dusts is favouring the production of gas oil engines with reduced displacement but equipped with turbocharger.
- **The global market of the turbochargers amounts to about 15 billion Euros in 2018 and will exceed 28 billions in 2025,** with an annual growth rate of about 9,4%.
- **The market penetration of the turbo in Europe is the highest at international level:** it will reach 69% in 2019, with the registration of 16 million vehicles with supercharged engines, in that year.
- **The market in Asia and Oceania will be experiencing the highest growth in the next years,**



due to the strict anti-pollution laws that will be introduced. These restrictions are leading car manufacturers to make low-emission vehicles.

In addition to the higher production of vehicles featuring turbocharger, the relative spare parts market is also growing remarkably: it is essential to play a key role in this market!

Types of supercharge

1. Volumetric compressor: this type of compressor is linear, meaning the power supplied is linear to the engine revolutions. It is not a turbocharger but an airfoil compressor that increases the speed and quantity of air input in the combustion chambers. The volumetric compressor is a simple system of immediate performances at low revolutions, however its thrust is limited and is exhausted at medium revolutions.

2. Turbocharger with fixed geometry: it is currently the standard to supercharge and is enabled by exhaust gases. This system, compared to the volumetric compressor, is exponential and increases the quantity of input air with the increase of the engine revolutions. It is a high efficiency system since energy is re-

covered. However, it boasts the inconvenience of the *turbo lag*, meaning a response delay due to the path that the exhaust gases must travel before reaching the exhaust rotor.

3. Turbocharger of variable geometry: also in this case, it is a turbine enabled by exhaust gases with the addition of variable geometry. In this type of turbo, it is possible to manage the flow and speed of the air that reaches the exhaust rotor.

4. Electric turbocharger: evolution of the two previous models, it is no longer enabled by exhaust gases but by an electric motor. However, due to its high absorption, it requires a 48 Volt electric circuit: in fact, this system is only featured on a few high-range vehicles but, with the evolution of technology and reduction of production costs, it will be more diffused in the future.

■ *It continues at page 6*



■ CORE ASSEMBLY
Meata.Doria: 60082
Hoffer: 6500082



■ TURBOCHARGER
Meata.Doria: 65002
Hoffer: 6900002

The complete range

■ AIR HOSE
Meata.Doria: 96059
Hoffer: 8196059



In the last quarter of 2018, M&D Group has introduced the turbocharger, calibrated with high-precision instruments and tested at the factory before being sold.

Turbochargers

It is supplied with a syringe with the right quantity of oil for assembly, threaded studs, gaskets and calibration and test certificate. These turbines are developed and built according to the

highest quality standards, thus being possible to inter-exchange them with original products. **M&D Group's range aims at covering 80% of the European market in 2019.**

Core assemblies

It is the turbo's central cartridge, meaning the physical part between the suction and exhaust chambers. It consists of two rotors, one of which is reached by exhaust gases and the other compresses the sucked air.

The range of M&D Group's core assemblies is balanced with high-precision laser instruments and tested individually before being input on the market in order to always ensure the highest quality standards.

Electrovalves

Solenoid valve that pneumatically enables the turbocharger through the depression

created by the vacuum pump.

Recirculating air valves

This valve protects the turbine's components when it is rotating at high revolu-

tions and the acceleration pedal is being released.



RECIRCULATING AIR VALVE
Meata.Doria: 9289
Hoffer: 8029289



ELECTROPNEUMATIC ACTUATOR
Available soon



VARIABLE GEOMETRY
Meata.Doria: 60513
Hoffer: 6500513



OIL PIPE
Meata.Doria: 63024
Hoffer: 6800024

NEWS
Turbo, the future is already here

Variable geometries

Featured only on some turbochargers, the variable geometry is a moving component

which adjusts the exhaust gas flow on the relative rotor and the speed the gases reach it.

Gaskets

It is a kit to replace all the seals of the turbocharger. Usually, it is recommended to also change the gaskets when the turbo is serviced;

these must be instead changed when the entire turbine or core assembly are replaced.

Oil pipes

These are the pipes that convey the oil flow inside the core assembly, a delivery and a return pipe. Since these components get clogged

easily, damaging all parts that require lubrication, it is recommended to change them when installing the turbocharger or core assembly.

Air hoses

These are hoses in which the atmospheric air sucked by the engine flows. They may wear

out and get damaged, causing additional damages to downstream components.

Pneumatic and electric actuators

Available soon

How to identify the code of the turbocharger

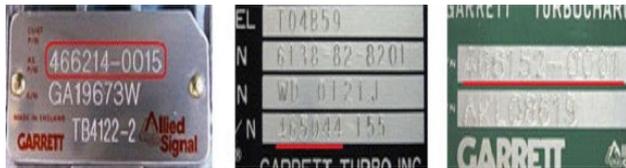


For proper replacement, it is essential to identify the proper code of the turbocharger.

Garrett

Code consisting of minimum 6 digits (the first number is 4 or 7), a hyphen and finally, a second set of alphanumeric characters.

For example: 454073-3, 750244-0014, or 454073-5007S.



Schwitzer

Schwitzer code consisting of 6 digits which univocally identifies a turbine.

For example: 311144, or 312172.



Borg KKK

Code consisting of 11 characters divided in 3 blocks separated by a hyphen, the first digit is 5 or K.

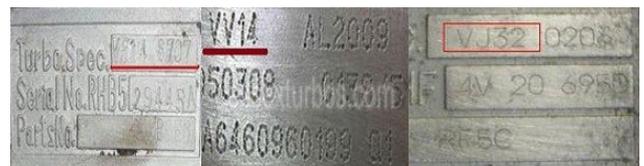
For example: 5303-970-0057, or 5303-988-0023.



IHI

Code consisting of 2 initial letters (the first is usually V), followed by a set of numbers which may end with a letter.

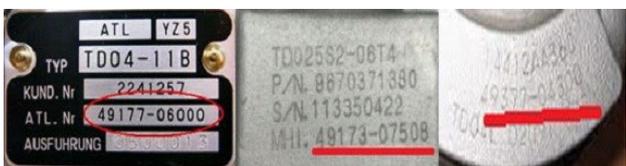
For example: VA180098, or VF39.



Mitsubishi

Univocal code that identifies a specific turbine. It generally consists of two sets of 5 numbers with a hyphen in the middle.

For example: 49177-02510, or 49173-05620.



Toyota

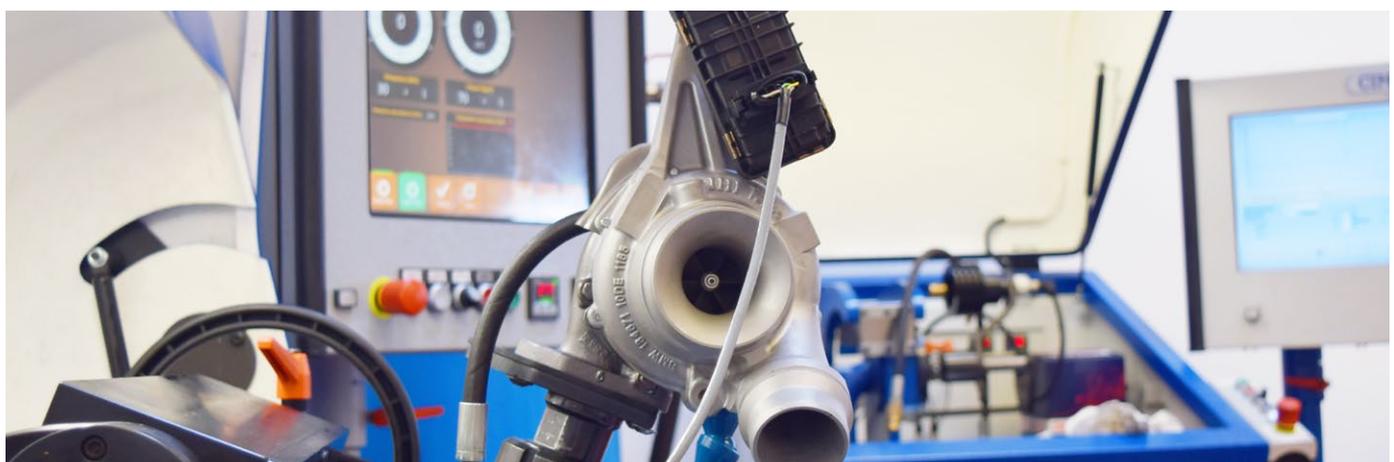
Code usually printed on the central body or an adhesive sticker, it consists of two sets of 5 characters separated by a hyphen.

For example: 17201-26050, or 17201-0L030.



What to do in case of issues

ISSUE	CAUSE	WHAT TO DO
<p>The rotor's shaft is purple or shows structural damages.</p>	<p>Shaft overheating, due to lack of lubrication or alteration of the oil viscosity that clogs the pipes.</p>	<p>Check and replace the oil pipes. Replace the core assembly or the turbocharger.</p>
<p>The suction rotor's airfoils are chipped, scratched or damaged.</p>	<p>Foreign objects in the suction circuit.</p>	<p>Replace the core assembly or turbocharger. Check and replace the air filter and air pipes. Check the conditions of the mass air flow sensor.</p>
<p>The exhaust rotor's airfoils are chipped, scratched or completely damaged.</p>	<p>Foreign objects derived from improper combustion or alteration of the engine's regular operating conditions that damaged the exhaust rotor.</p>	<p>Replace the core assembly or turbocharger. Check the engine's operating parameters carefully and restore default parameters.</p>
<p>The turbine has troubles reaching the proper revolutions.</p>	<p>Clogging of the anti-particle filter with accumulation of carbon residues in the exhaust pipes.</p>	<p>Check the condition of the anti-particle filter. Check the engine's operating parameters.</p>
<p>The variable geometry is not activated properly or is blocked.</p>	<p>Poor lubrication, excessive presence of sediments on the exhaust screws.</p>	<p>Check and replace the variable geometry. Check the engine's operating parameters.</p>





A/C SYSTEM

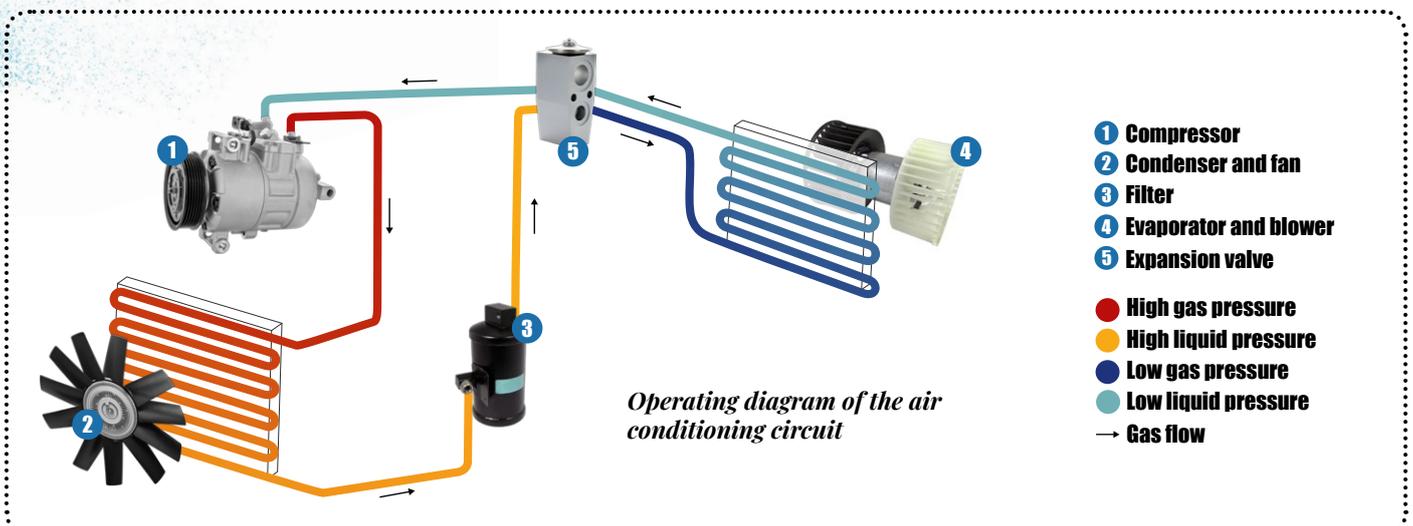
Cabin fan: operation and causes of malfunctioning



Meats&Doria / Hoffer: K92084
Krios AC: 9.2084



The cabin fan, also known as *cabin GMV* or *blower*, is an essential component of the HVAC module (Heating, Ventilation and Air Conditioning) which sucks atmospheric air and conveys it through the heat exchangers. It conveys the hot or cold air inside the cabin in order to adjust the internal temperature and demist the glasses. It consists of the centrifuge rotating fan mounted to the motor shaft in 12V or 24V direct current. Its speed can be adjusted through the dashboard instruments, which will vary the power absorbed by the motor-fan through a resistor or electronic regulator. It is a delicate component that **can be easily damaged** because made in plastic and sensitive to electric interferences.



What causes the fan malfunctioning?

- A **cabin filter that is not replaced** according to proper maintenance frequencies may lose some of its parts that end up in the cabin fan, bending the blades and causing noise or malfunctioning.
- A **voltage peak upon enabling** that could damage the fan's electric components.
- **The formation of condensate**, caused by the clogged/crushed exhaust due to wrong assembly or dirt may decrease the life of the carbon motor brushes of the blower.

What to do in case of fan malfunctioning?

ISSUE	CAUSE	WHAT TO DO
The cabin fan does not turn.	Block due to foreign objects that probably detached from the cabin filter. Fan's connectors not properly mounted.	Check the presence of potential foreign bodies, make sure the fuse did not blow, check the alternator and electric circuit.
The cabin fan does not turn at all set speeds.	The fan's power resistor is faulty.	Replace the resistor and fan regulator.
The cabin fan emits anomalous sounds.	Mechanical damage of the fan caused by foreign body, unbalanced rotating part, worn engine, faulty assembly.	Replace the cabin fan.
The fan turns anomalously.	Damaged brush parts in carbon.	Replace the cabin fan.

The cabins's climatic comfort highly depends on the fan and its proper operation, for this reason Krios AC electro-fans ensure:



Easy installation



Minimum noise



Maximum comfort



Greater resistance to mechanical damages and wear



Control of high pressure speed



Units and OE electric resistors

Resistors and regulators

The speed of the cabin fan is controlled by **resistors** or electronically, by the **fan's regulators**. These components are directly connected to the blower: the proper operation of these components affects the operation of the fan and in some cases, the radiator's air conveyors.



Meat&Doria / Hoffer: K106024
Krios AC: 10.6024



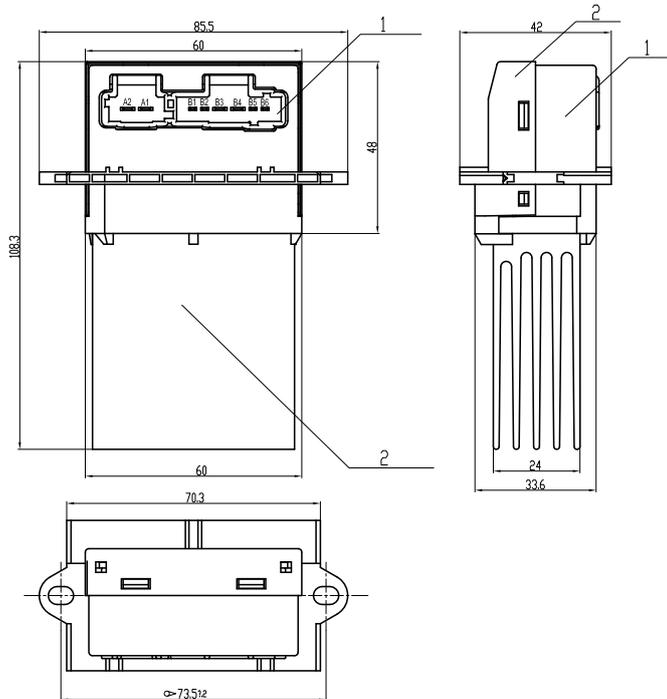
Meat&Doria / Hoffer: K109001
Krios AC: 10.9001

The **resistor** has the task to convert excess electric energy in heat and transmit the other part to the electric circuit. As a consequence, they regulate the engine speed, reducing the voltage available for the blower. Since they are solicited each time the fan is turned on, they are subject to wear and failure caused by voltage peaks. Therefore, checking this component is fairly simple.

The **fan's regulator**, also called *ventilation-heating unit*, is an electronic component (operating in PWM) consisting of a printed circuit; small condensators may also be present in some types. It is characterised by a finned heat sink in aluminium, designed to ensure the proper operation of the internal electronics. It is located near the blower and connected to the latter through a specific wire.



Meat&Doria / Hoffer: K106043
Krios AC: 10.6043

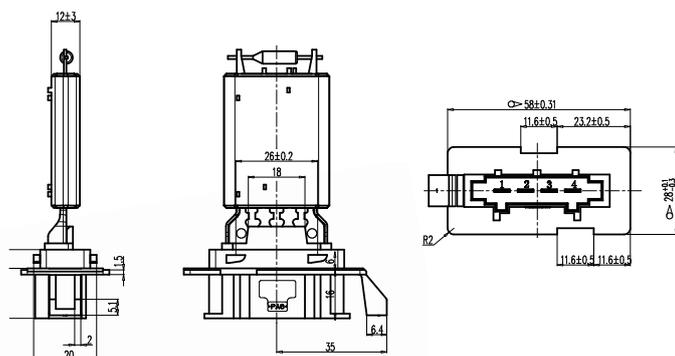


Some models, based on manufacturer's choice, they are mounted in the cabin fan, therefore, in case of failure, the entire component must be replaced.

The position may vary considerably according to car model, however, they are often located in the feet area on the passenger side near the glove cabin. The disassembly phase is very simple and the operation does not require many hours of labour. They are usually secured to a plastic support and can be easily extracted.

Always check the condition of the wires when replacing these components.

Only OE wires ensure suitable replacement of these delicate components.



Design of a regulator and resistor



Meat&Doria / Hoffer: K26202
Krios AC: 2.6202



Meat&Doria / Hoffer: K26201
Krios AC: 2.6201

Krios AC supplies all the tools to the maintenance operator for professional, quality repairs.



ATTENTION TO QUALITY

In case of electronic components subject to constant stresses, as in this case, quality is essential.

Krios AC only supplies components able to ensure constant reliability in time.



Customer service - Krios AC technical team

Tel: +39 011 647 40 57 ext 5

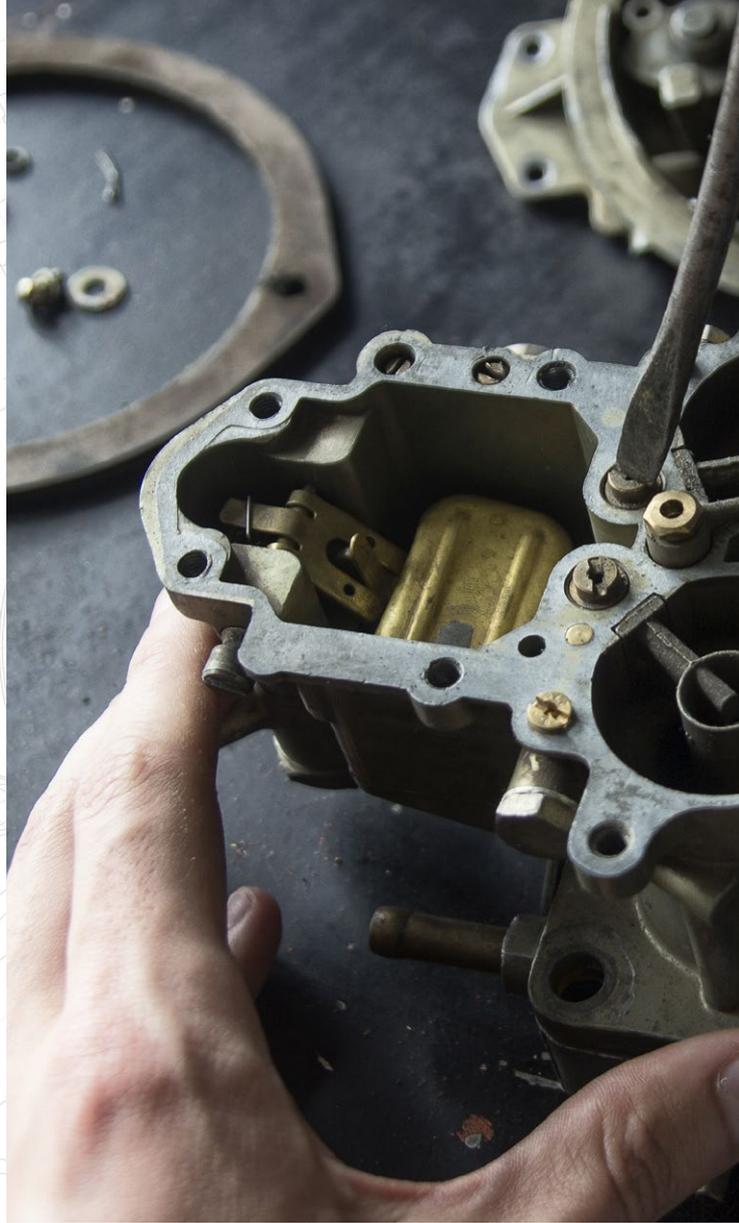
Mail: helpdesk@kriosac.it

Skype: helpdesk.kriosac



FOCUS

M&D Group repair kits



Why buying a new spare part when the component can be repaired to make it functioning again? This is a question to ask when a pricy component or a component difficult to find on the market must be replaced, such as the carburettor, steering pump, common-rail injector, etc. must be replaced. **M&D Group pays utmost attention to the opportunities for its distribution chain:** hence, it introduced specific kits in its range to repair and restore components that are pricy to replace for the end customer, if not repaired.

Tandem pumps repair kit

It consists of rubber and metal gaskets, screws, various components. The pump's surfaces and seals are repaired with this kit, thus restoring its perfect operation.



Example codes

Meat & Doria: 91147

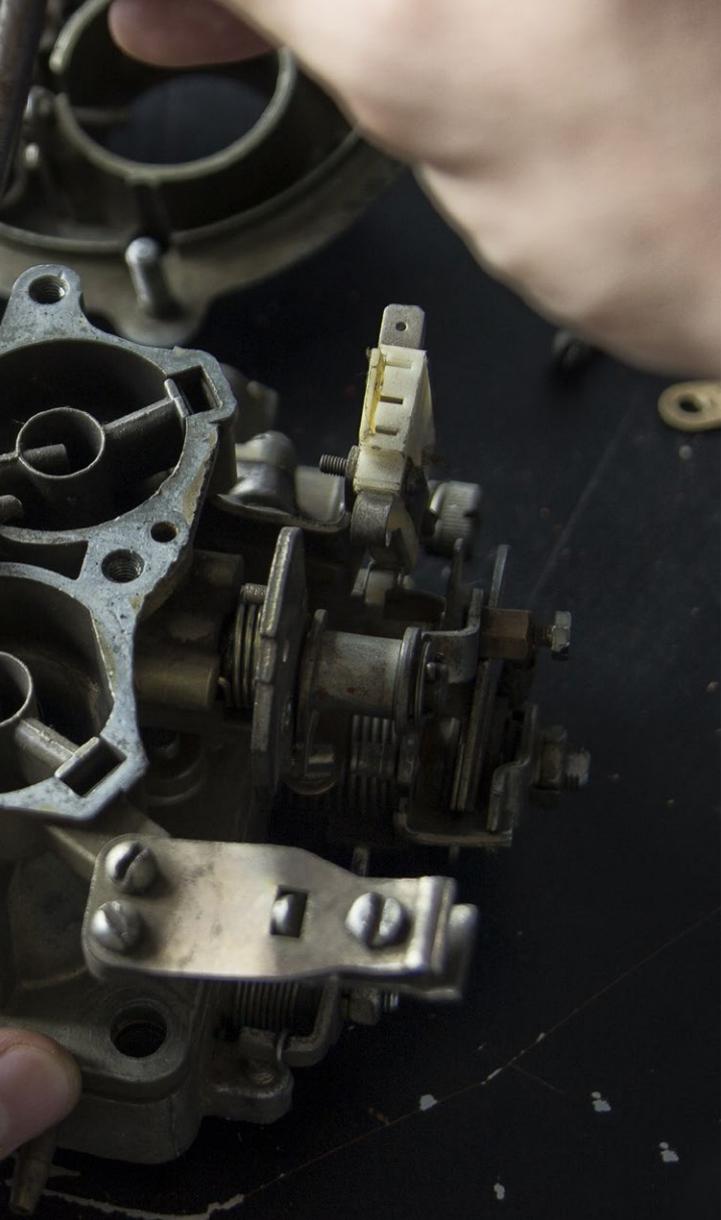
Hoffer: 8091147



All the components of our repair kits are made in Italy* and satisfy the highest quality standards set forth by the market.

Made in Italy

** Except for repair kits of power steering pumps that are manufactured in Europe.*



Carburetors repair kit

It consists of gaskets, washers, membranes and pin housings. M&D Group is specialised in any type of spare parts for carburetors (maximum/minimum jets, mix adjusting screws, springs and pins, etc.) useful to restore parts that are most subject to wear and lose efficiency with time.

Example codes
Meat & Doria: S44G
Hoffer: HS44G



Common rail pumps repair kit

It consists of gaskets, o-rings, seals and caps.

Example codes
Meat & Doria: 9155
Hoffer: 8029155



Repair kits of LPG reducers

It consists of high and low pressure membranes, bushes, valves, o-rings and other components.

Example codes
Meat & Doria: 13013
Hoffer: H13013



Repair kit for steering pumps

It mainly consists of seal bands, o-rings, special gaskets. It is useful to replace all rubber parts that can no longer be used when the pump is dismantled for maintenance.

Example codes
Meat & Doria: 37075
Hoffer: 8037075



Repair kit for pump injectors

It is not designed for internal repairs but for external repairs (this type of injectors feature external gaskets with basic end-stop washer). They consist of o-rings, base washer in copper, calibrated ball.

Example codes
Meat & Doria: 9274
Hoffer: 8029274

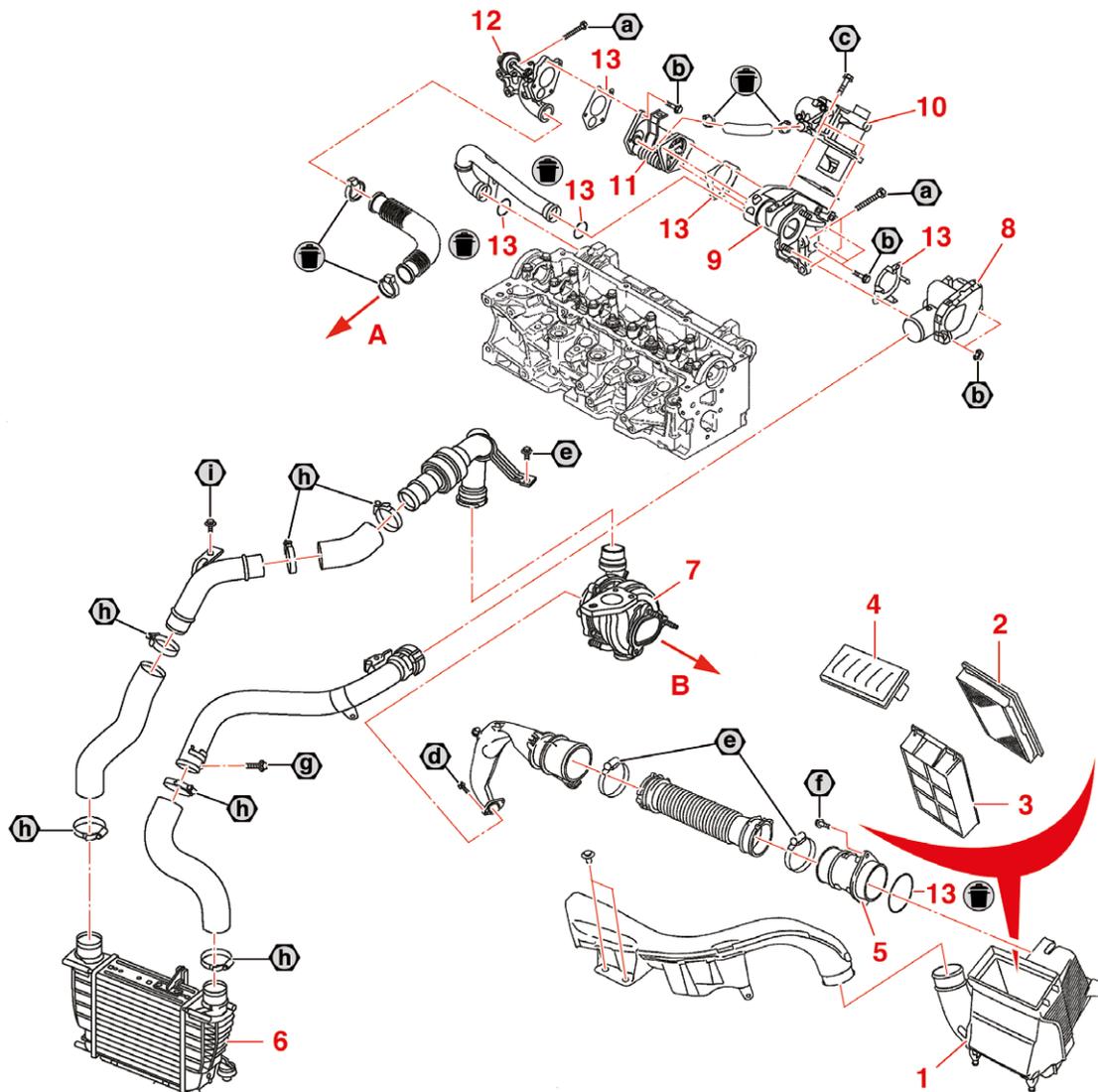


► Nissan Juke 1.5 DCi 110 HP since 09/2010

REPAIR METHODS

This procedure is provided by Infopro Digital Automotive

AIR INTAKE CIRCUIT



A. Towards the discharge manifold
B. Towards the outlet pipe of the turbocharger

- 1. Air filter box
- 2. Air filter
- 3. Air filter support
- 4. Air filter box cover
- 5. Air mass flow sensor

- 6. Air/air exchanger
- 7. Turbocharger
- 8. Moto-actuator
- 9. EGR valve support
- 10. EGR valve
- 11. Water/EGR exchanger
- 12. EGR valve
- 13. Gasket

- a. 2,5 daN.m
- b. 1,2 daN.m
- c. 1 daN.m
- d. 0,8 daN.m
- e. 0,55 daN.m
- f. 0,4 daN.m
- g. 0,66 daN.m
- h. 1st phase: 0,5 daN.m - 2nd phase: 0,7 daN.m
- i. 1,35 daN.m

This procedure is provided by **Infopro Digital Automotive**

REPAIR METHODS

DISCONNECTION-RECONNECTION OF THE AIR FILTER



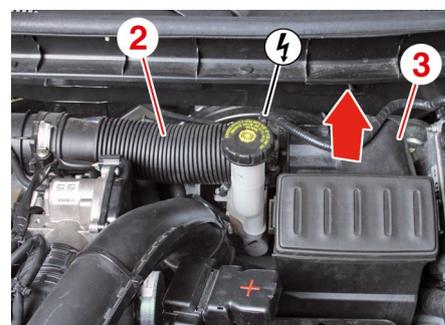
Disconnection

- Disconnect the pipe **(1)** (Pic. 12).



Pic. 12

- Disconnect:
 - the pipe **(2)** (Pic. 13),
 - the battery,
 - the air filter box **(3)**.



Pic. 13

Reconnection

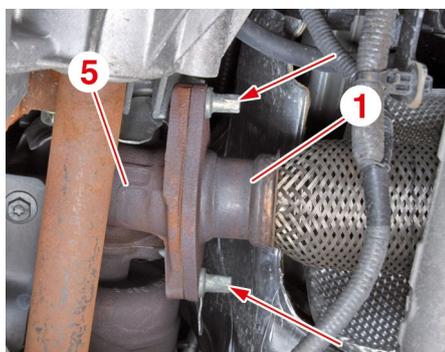
- Follow the disconnection inverse procedure.

DISCONNECTION-RECONNECTION OF THE TURBOCHARGER

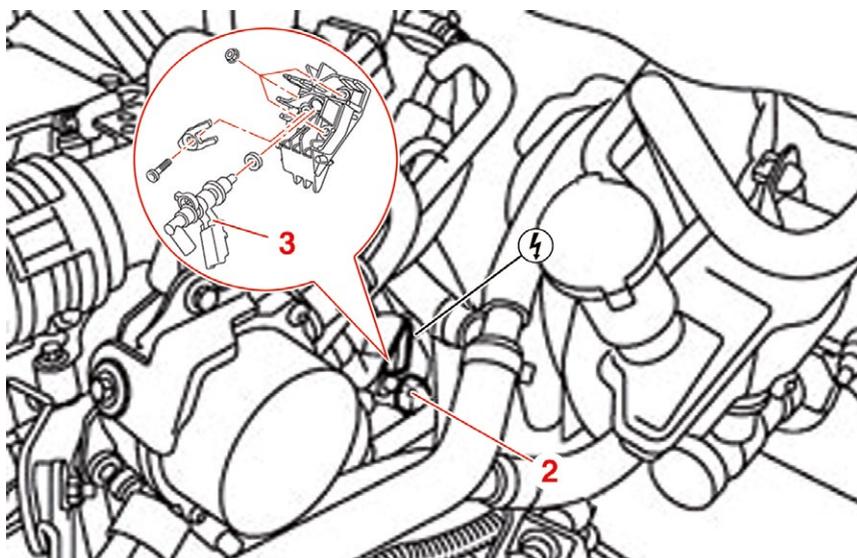


Disconnection

- Separate the discharge line **(1)** (Pic. 14).
- Detach the water/EGR exchanger (see relative operation).

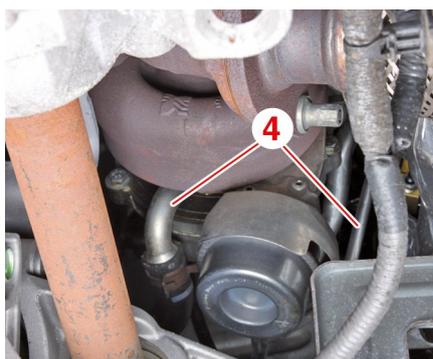


Pic. 14

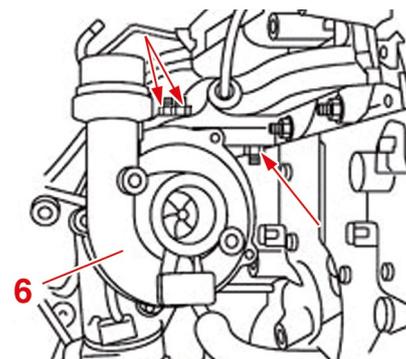


Pic. 15

- Disconnect the fitting **(2)** of the discharge fuel injector **(3)** (Pic. 15).
- Detach the pipes **(4)** (Pic. 16).
- Detach:
 - the outlet pipe **(5)** (Pic. 14),
 - the turbocharger **(6)** (Pic. 17).



Pic. 16



Pic. 17

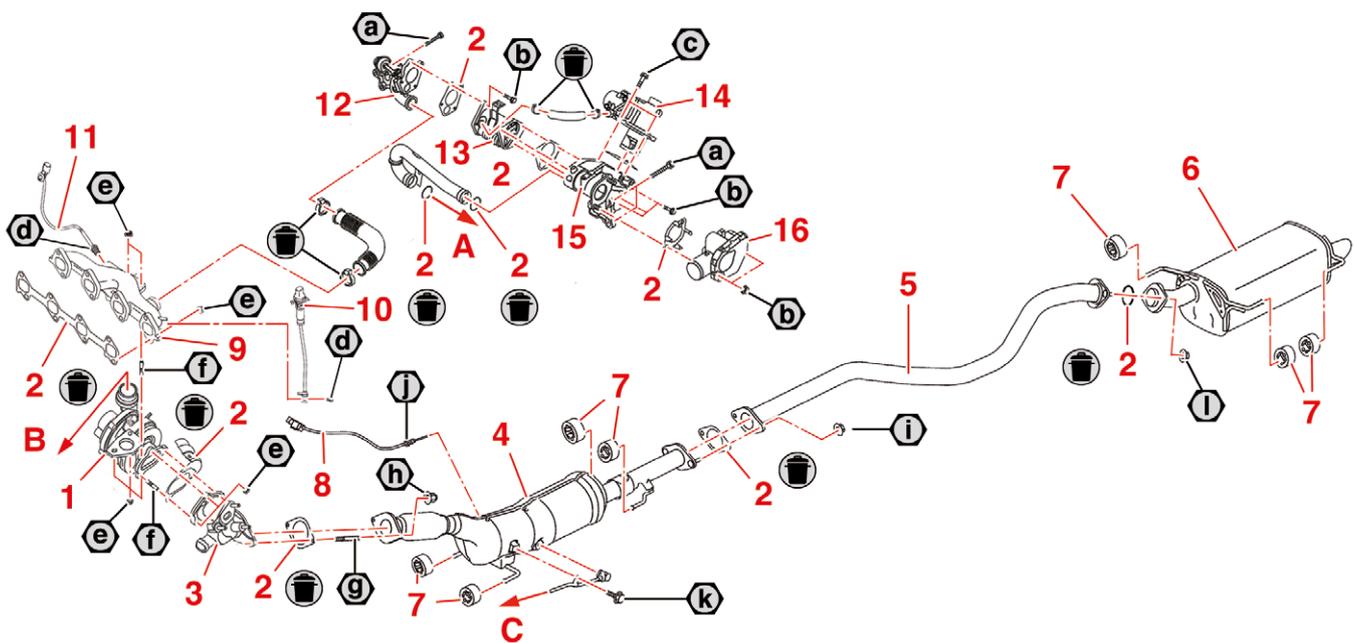
REPAIR METHODS

This procedure is provided by **Infopro Digital Automotive**

Reconnection

- Follow the disconnection inverse procedure.

ANTIPOLLUTION AND EXHAUST CIRCUIT



- A.** Towards the suction pipe
- B.** Towards the air suction pipe (see "Air supply circuit")
- C.** Towards the discharge gas pressure sensor

- | | | |
|--|---------------------------------------|----------------------|
| 1. Turbocharger | 9. Exhaust manifold | a. 2,5 daN.m |
| 2. Gasket | 10. Discharge gas pressure sensor | b. 1,2 daN.m |
| 3. Turbocharger's outlet pipe | 11. Discharge gas temperature probe 1 | c. 1 daN.m |
| 4. Anti-particulate/catalyst filter unit | 12. EGR valve | d. 5 daN.m |
| 5. Centre pipe | 13. Water/EGR exchanger | e. 2,6 daN.m |
| 6. Silencer | 14. EGR valve | f. 0,9 daN.m |
| 7. Silentbloc | 15. EGR valve support | g. 0,65 daN.m |
| 8. Discharge gas temperature probe 2 | 16. Moto-positioner | h. 2,1 daN.m |
| | | i. 5,8 daN.m |
| | | j. 3,8 daN.m |
| | | k. 0,22 daN.m |
| | | l. 3,5 daN.m |

This procedure is provided by **Infopro Digital Automotive**

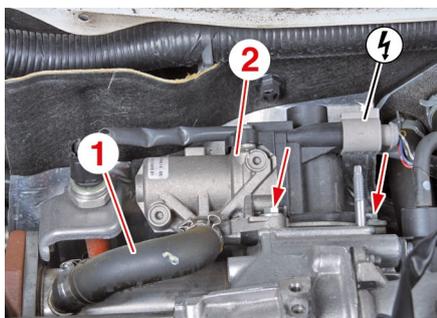
REPAIR METHODS

DISCONNECTION-RECONNECTION OF THE EGR VALVE



Disconnection

- Discharge the cooling circuit
- Detach:
 - the engine's upper guard,
 - the air filter box.
- Detach:
 - the sleeve **(1)** (Pic. 18),
 - the EGR valve **(2)** (Pic. 18).



Pic. 18

Reconnection

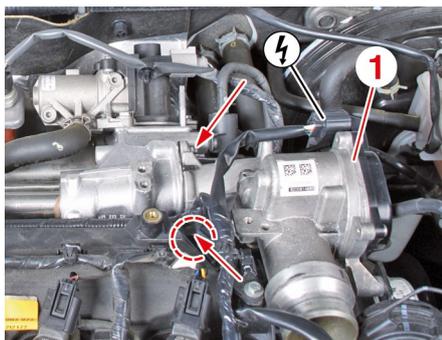
- Follow the disconnection inverse procedure.

DISCONNECTION-RECONNECTION OF THE WATER/EGR EXCHANGER

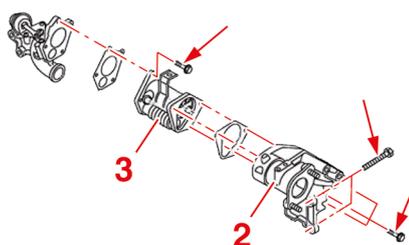


Disconnection

- Detach:
 - the EGR valve (see relative operation),
 - the moto-positioner **(1)** (Pic. 19).
- Detach:
 - the EGR valve support **(2)** (Pic. 20),
 - the exchanger **(3)** (Pic. 20).



Pic. 19



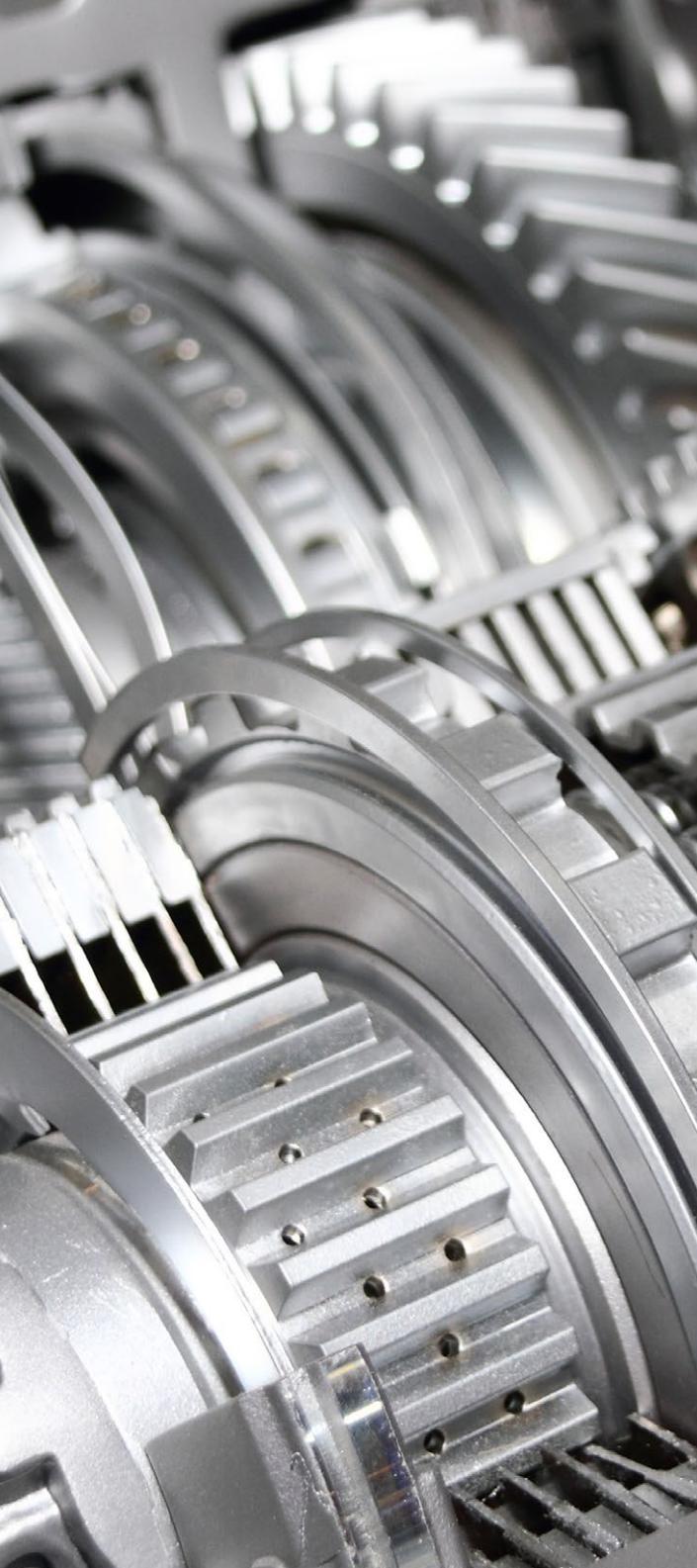
Pic. 20

Reconnection

- Follow the disconnection inverse procedure.

INFOPRO
digital





MARKET

Automatic shift: between history and evolution

Automatic transmissions are a recent invention: the first patent was filed in Italy in the '30s, while the first industrial production took place in the United States between the '40s and '50s by car manufacturer Oldsmobile. They were initially 4-gear, hydraulic transmissions without clutch. The fifth gear was introduced in the '80s, with the introduction of the torque converter that brought a great technological contribution and further favoured the diffusion of automatic transmissions. From the '90s, more investments were made in electronic gearing, adding gears and optimising the mechanics of transmissions; the introduction of the double clutch and mechatronic systems to manage gearing are an example. Today, car manufacturers propose this technology and standard equipment, also on engines with reduced displacements. Automatic gears of last generation are light and compact, they feature various gears (up to 10 in the last versions) and thanks to the shifting fluency and facility of use, are appreciated by any user. Moreover, they are fully compatible with hybrid systems (they are often integrated in the same gear) and they easily integrate with A.D.A.S. (advanced

“ Automatic shifts of last generation are light and compact, they feature a wide range of gears and their fluidity is appreciated by any type of user. ”



All our filters are supplied with relative gasket to mount when replacing the filter.

driving assistance systems), therefore they are destined to become the standard for the future.

| Types of gears

- 1. Torque converter automatic gear:** it is one of the most advanced and reliable transmission technologies and mounts a torque converter instead of the traditional clutch.
- 2. Robotised gear:** it is closer to the concept of manual shifting compared to other types; the clutch and gear shifting are managed independently from the control system according to the engine revolutions and requested load.
- 3. Double clutch automatic gear:** equipped with two clutches: the first sets up and enables even gears while the second enables uneven gears. The result is extreme enabling speed since shifting is shared between the two clutches.
- 4. Continuous variation automatic gear:** compared to other gearing systems, it does not use specific and defined gears, it features unlimited gears between minimum and maximum design value.

| What M&D Group offers

M&D Group decided to focus on a product that is often underestimated, of primary importance to face the broader market of automatic transmissions; we are talking about specific **oil filters for gears**.

In these automatic systems, due to the very high speeds and gearing frictions, there is an oil lubrication system that avoids seizing and early wear. With time and constant use, this oil is contaminated with iron scales generated from frictions, therefore a filter is required to retain the efficiency longer. This is why an **oil filter** for automatic shift is used, which must be replaced at frequencies established by the manufacturer or according to needs.

The range of transmission oil filters will cover over 85% of the European market.



PARTS

Over 20.000 refs.

The full range

ENGINE MANAGEMENT

Over 2000 refs.

- Idle speed controls ▶ 95 refs.
- Relays and component ▶ 140 refs.
- Injectors ▶ 120 refs.
- Electronic control units ▶ 85 refs.
- Throttle bodies ▶ 380 refs.
- Cohlne ▶ 74 refs.
- LPG / CNG ▶ 90 refs.
- Pressure regulators ▶ 35 refs.
- Electrical small parts ▶ 430 refs.
- Mechanical small parts and kits ▶ 150 refs.
- Cable harness kits ▶ 420 refs.
- Air intake manifold modules ▶ 15 refs.

EMISSION CONTROL

Over 1300 refs.

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

IGNITION COILS AND MODULES

Over 580 refs.

- Ignition coils ▶ 550 refs.
- Ignition modules ▶ 30 refs.

LIGHTING AND COMFORT

Over 1150 refs.

- Brake light switches ▶ 155 refs.
- Reverse light switches ▶ 130 refs.
- Hazard light switches ▶ 26 refs.
- Power window switches ▶ 95 refs.
- Steering column switches ▶ 500 refs.
- Level sensors ▶ 21 refs.
- Xenon light control units ▶ 61 refs.
- Door lockers ▶ 180 refs.
- Regulation module for power window motors ▶ Available soon

FUEL PUMPS

Over 1800 refs.

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

TURBOCOMPRESSORI

Over 1050 refs.

- Turbochargers ▶ 62 refs.
- Core assemblies ▶ 400 refs.
- Variable geometries ▶ 30 refs.
- Oil pipes ▶ 88 refs.
- Air hoses ▶ 200 refs.
- Recirculating air valves ▶ 10 refs.
- Gaskets ▶ 270 refs.
- Wastegates ▶ Available soon

ELECTRIC PARTS

148 refs.

- Electric water pumps ▶ 148 refs.

VACUUM PUMPS

Over 180 refs.

- Vacuum pumps ▶ 175 refs.
- Vacuum pump accessories ▶ 7 refs.



STARTER SYSTEM

Over 650 refs.

- Pulleys ▶ 200 refs.
- Voltage regulators ▶ Available soon
- Starterdrives ▶ 220 refs.
- Rectifiers ▶ Available soon
- Electromagnets ▶ 260 refs.
- Brushes ▶ Available soon

MECHANICAL PARTS

Over 460 refs.

- Oil coolers ▶ 240 refs.
- Steering pumps repair kits ▶ 100 refs.
- Oil valves ▶ 60 refs.
- Camshaft phaser solenoid valves ▶ 67 refs.

COOLING SYSTEM

Over 600 refs.

- Thermostats ▶ 495 refs.
- Thermal systems ▶ 10 refs.
- Water flanges and hoses ▶ 105 refs.
- Oil hoses ▶ Available soon
- Water hoses ▶ Available soon

SENSORS

Over 3600 refs.

- Knock sensors ▶ 135 refs.
- Throttle position sensors ▶ 70 refs.
- Acceleration pedal sensors ▶ 90 refs.
- Camshaft and crankshaft sens. ▶ 820 refs.
- Torque sensors ▶ 18 refs.
- Pressure sensors ▶ 262 refs.
- Parking sensors ▶ 138 refs.
- Oil level sensors ▶ 24 refs.
- Exhaust gas press. sensors ▶ 60 refs.
- Temperature sensors ▶ 375 refs.
- ABS sensors ▶ 830 refs.
- Fuel pressure sensors ▶ 26 refs.
- Oil pressure switches ▶ 51 refs.
- Exhaust gas temp. sensors ▶ 625 refs.
- Brake pad wear sensors ▶ 130 refs.

Also available

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

OXYGEN SENSORS

Over 580 refs.

- Oxygen sensors ▶ 553 refs.
- Universal oxygen sensors ▶ 26 refs.

DIESEL PARTS

Over 400 refs.

- Common rail pressure sensors ▶ 66 refs.
- Common rail press. regulators ▶ 110 refs.
- Other ▶ 250 refs.

AIR CONDITIONING

Over 2350 refs.

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

FILTERS

Oltre 2000 refs.

CARBURETTOR KITS

430 refs.



NEWS

Turbo, the future is already here



A/C SYSTEM

Cabin fan: operation and causes of malfunctioning



GARAGE

Repair methods:
Nissan Juke



MARKET

Automatic shift: between history and evolution



Technical and product information



OVERVIEW



www.meat-doria.com
www.hoffer-products.com