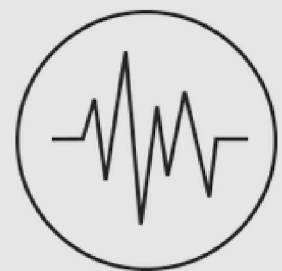


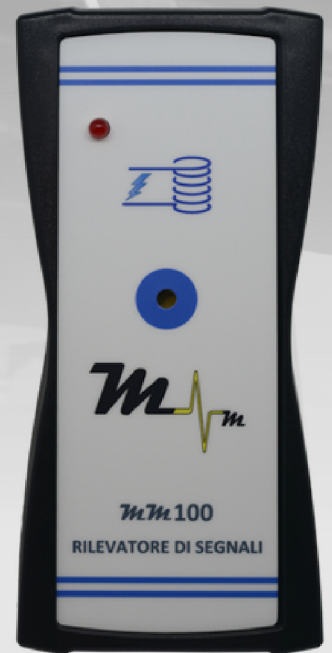
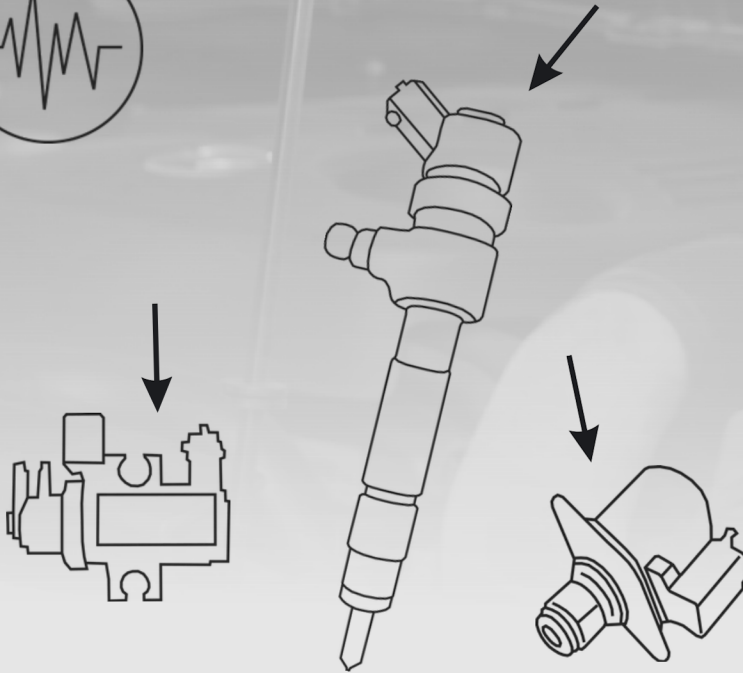
M **D**EROSI
MASSIMO s.r.l.



**BEYOND THE LIMITS
OF SELF-DIAGNOSIS**



MM100



Signal detector

It allows to establish if a component is controlled by the control unit avoiding the use of the oscilloscope. By placing a simple probe on the component coil, it is possible to define if the piloting is active and to establish the continuity of the wiring.

Eg.

If applied on a common rail injector, it allows to establish if the injector is piloted, consequently, it can be deduced that:

- Coil is ok
- Wiring is ok
- The control unit is powered
- The control unit receives the signal from the rpm sensor
- The operation of the rail pressure sensor is ok

It can be used to analyze components powered from 5 to 50,000 volts



MM100/A



Common rail fuel pressure sensor simulator

Enables the electric control of the common rail injectors in the absence of fuel pressure, giving the operator the certainty of the electrical measurement made with MM100

Eg.

If connected in place of the fuel pressure sensor, it can replace it, emulating a pressure of 800 bar to perform some tests:

- Re-enable the injectors command to determine if the problem is electrical or hydraulic
- Check the correct communication of the sensor wiring with the control unit
- Reads the diesel pressure through diagnosis to establish if the control unit receives the simulated 800 bar



MM104



DIAGNOSIS FOR THE PREHEATING SYSTEM

The tester is able to automatically recognize the type of glow plug in question.
Eg. Duty cycle (pwm) and traditional controlled glow plugs.

By performing the test it is possible to:

- Finding burnt tip glow plugs but with a working circuit
- Compare the glow plugs to see if some are more efficient than others
- Test the glow plugs with pressure sensor

It is also possible to check the command signals that arrive from the preheating module or from the control unit and then the cables.

At the end of the test, by connecting the instrument to a PC, a summary printout of the memorized graphs is obtained.

Vbat = 13.4V

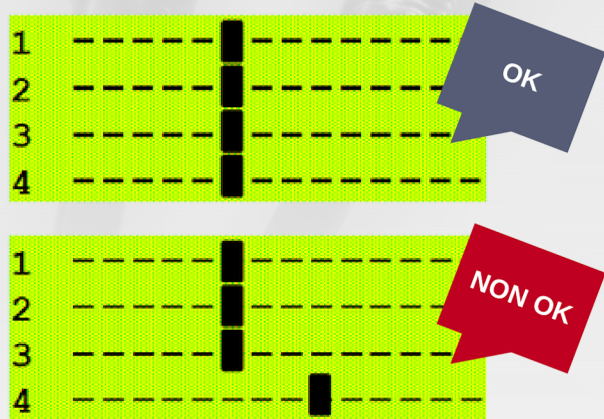
██████████ 17A

Max 17A @13.4V
R iniz 0.64 ohm
R fine 0.69 ohm
---OK--- (d=8%)

Test results:

- Maximum current absorbed by the glow plug
- Battery voltage
- Resistance of the glow plug at the start of the test
- Resistance of the glow plug at the end of the test
- % variation in resistance
- Result of the test

Comparative graph to check whether the glow plug efficiency is aligned or not



DEROSSO SERVICE - glow plug test

MARCA MODELLO TARGA 30-09-2014 12:42

TIPO MOTORE CILINDRATA Km CANDELETTE

andamento della RESISTENZA durante il RISCALDAMENTO

valori della RESISTENZA

1	2	3	4
---	---	---	---

ATTENZIONE: in caso di estrazione delle candele, puo' verificarsi la rottura di una di queste rendendo necessario lo smontaggio della testata motore.

PRINT EXIT

canaletta 1 **OK**
IMax=11A @Vbat=13.0V
Riniz=0.98 Rfine=1.06 ohm
delta=8%

canaletta 2 **OK**
IMax=11A @Vbat=12.9V
Riniz=1.00 Rfine=1.09 ohm
delta=9%

canaletta 3 **OK**
IMax=11A @Vbat=13.0V
Riniz=0.98 Rfine=1.09 ohm
delta=11%

canaletta 4 **OK**
IMax=16A @Vbat=12.7V
Riniz=0.60 Rfine=0.63 ohm
delta=5%

canaletta 5 **NO**
RESISTENZA INTERRUPTA

canaletta 6 **NO**
RESISTENZA INTERRUPTA

OFFICINA Speed
Viale Certosa 156
20100 MILANO
tel. 02/775698



KIT PWM

It represents a valid help in the fault finding of PWM controlled parts.



MM103 - Power supply tester

Allows you to check if the component is powered in dc or in pwm, indicating the percentage of command that varies from 10% to 100%

Eg. If applied to a variable displacement compressor of an air conditioning system, it is possible to:

- Define if the wiring is ok
- Define if the component is powered
- Understand how the component is powered
- Identify the type of power supply for any subsequent tests



Thanks to the wide range of wiring supplied, it is possible to connect to a variety of components: EGR valves, variable geometries, compressors for variable displacement air conditioners, latest generation headlights, flow and pressure regulators.



MM101 - PWM signal generator

It allows you to control the pwm components of an engine such as egr, variable geometries, compressors, regulators and much more. It generates a pwm power supply of 12 volts giving the possibility to vary the opening in percentage from 10% up to 90%

Eg. If used on an egr valve it allows to:

- Drive the component on the car verifying the variation of the diagnostic parameters
- Test its electrical operation
- Check its mechanical operation
- Check the smooth opening and closing of the plate
- Pilot the component in the ultrasonic tank to clean it internally

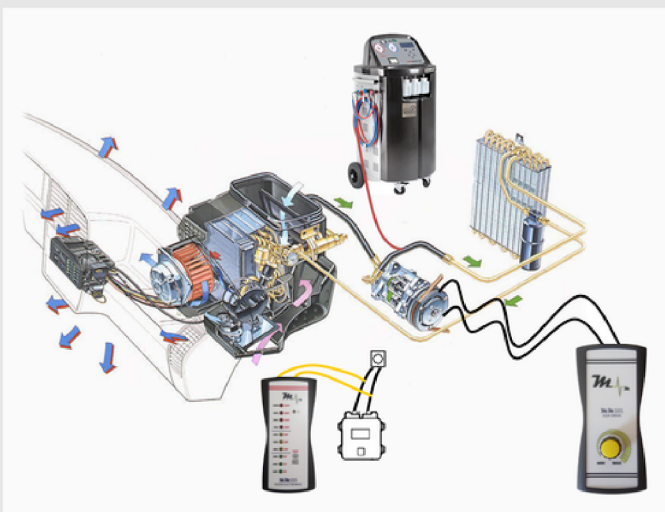


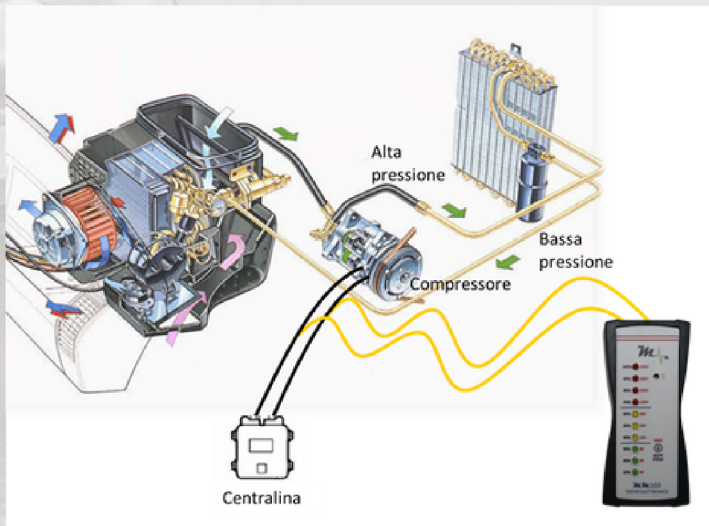
By combining MM103 with MM101 I can:

- Check the component on the car (MM103)
- Command the component on the car (MM101)
- Clean the component on the bench
- Test the component on the bench

Eg. On an air conditioning system I can:

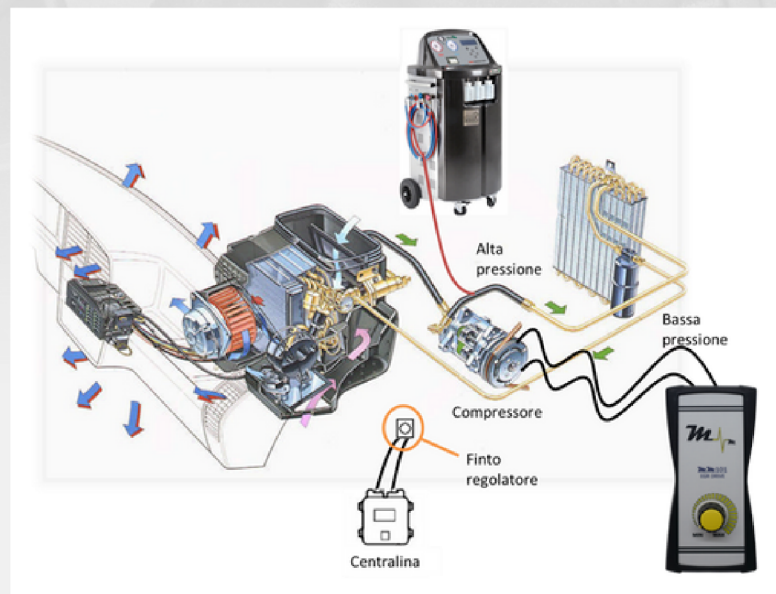
- Determine if the control unit controls the compressor (MM103)
- Drive the compressor autonomously from the control unit (MM101)
- Read the system pressure using the climate charge





Check component
on car

Component control
on car



Testing of the component on the bench

Cleaning of component on the bench

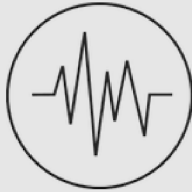




THE METHOD

Electrical tests: I run them to determine if the component is getting the right power and the right command.

Eg. They allow you to check if:



- The injector is controlled by the ECU
- The component is powered in direct current or in pwm
- Wiring is ok
- I can generate a command to power the component as if I were the ECU

Mechanical tests: I run them to determine if the components I'm testing are working mechanically.

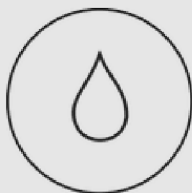
Eg.



- Compression test
- Control of movement of the egr valve plate
- Variable geometry turbine movement control
- I can clean the inside of some components in the ultrasonic tank

Hydraulic tests: I run them to determine if the common rail system reaches an adequate pressure.

Eg. They allow you to check if:

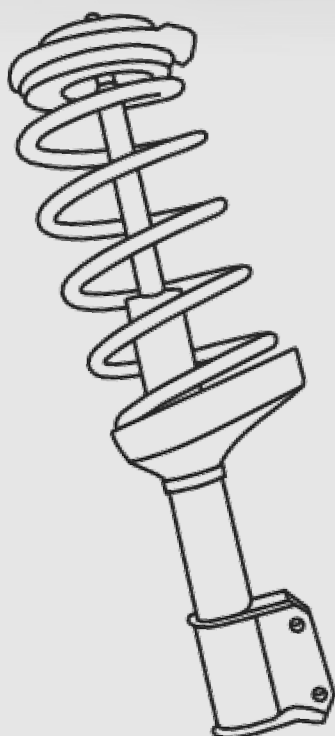
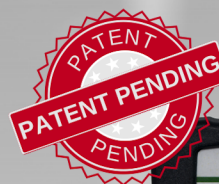


- The pump generates enough pressure
- The injectors have a good tightness
- The injectors open during the pulse
- I can control the system pressure via the pressure/flow regulators as if I were on a test bench





MM111



Born to test the efficiency of shock absorbers, the instrument is able to:

- Analyze each suspension individually
- Make an analysis of the efficiency of the individual axes
- Perform roll test
- Perform vibration test
- Release a print with the result of the test
- Determine the efficiency of the spring by separating it from the shock absorber and the surrounding mechanics

Eg. By carrying out a test on the shock absorber it is possible to establish whether:

- The shock absorbers on the same axis are comparable to each other
- There are mechanical frictions that can affect the efficiency of the suspension
- The lowering of the nose of the car during braking is balanced (roll)

Shock absorbers are an integral part of safety systems (such as ABS and ESP) which constantly read wheel revolutions.

A worn shock absorber causes the wheel to jump, compromising the intervention of the safety systems.

Unfortunately, to date they are not tested enough



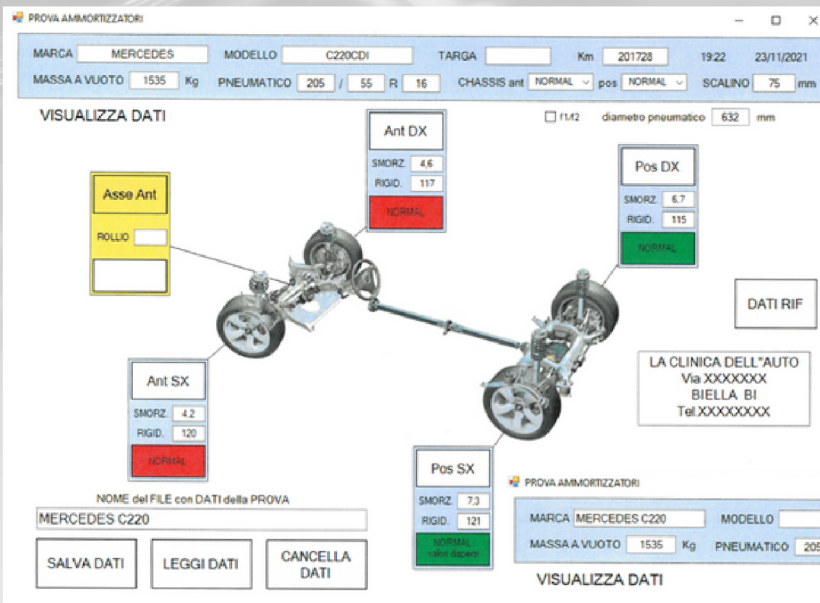
Our test method

Our method involves performing a test in an extremely simple way, it will be sufficient to apply the sensors on the mudguards and go down a special step. During the descent, the sensors will record acceleration, speed and displacement. The dedicated software will finally show a report with the health conditions of the tested shock absorbers.

"Let's begin to dispel a false myth: pushing down on the 4 corners of the car is useless. Unless you are faced with a car that only rests on springs, it is not possible to understand the state of the shock absorbers from the way in which the car is raised after pushing it down."

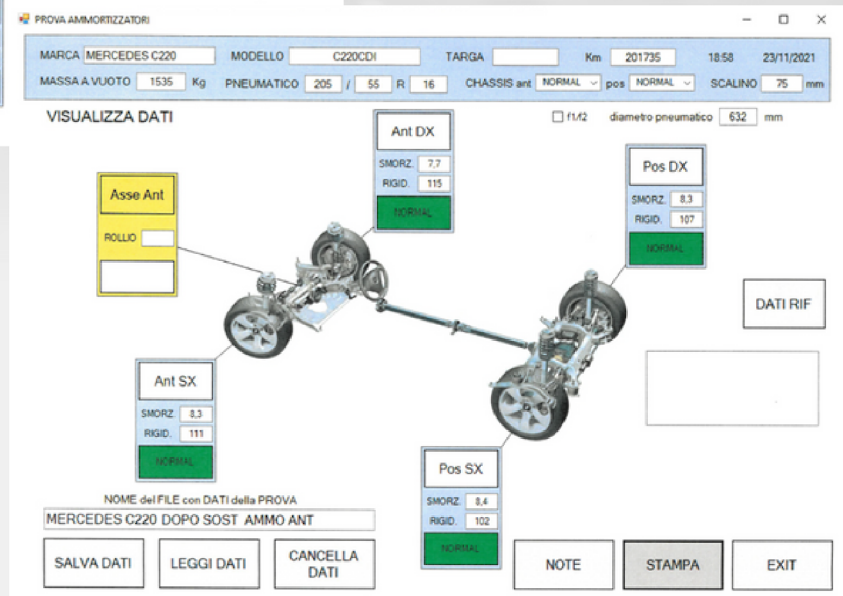
From a Monroe article

Shock absorber test

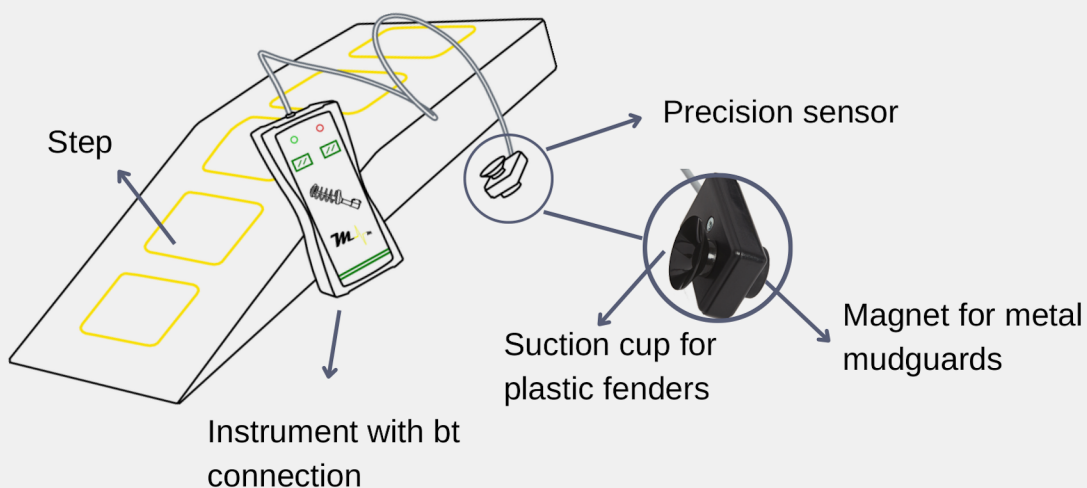


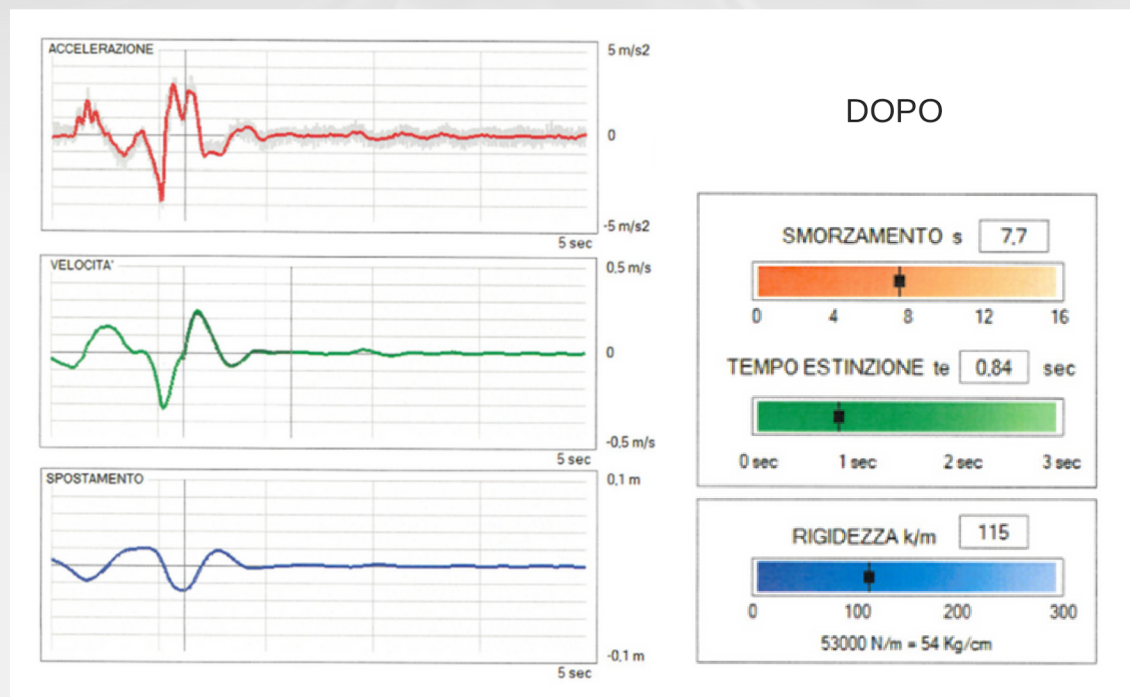
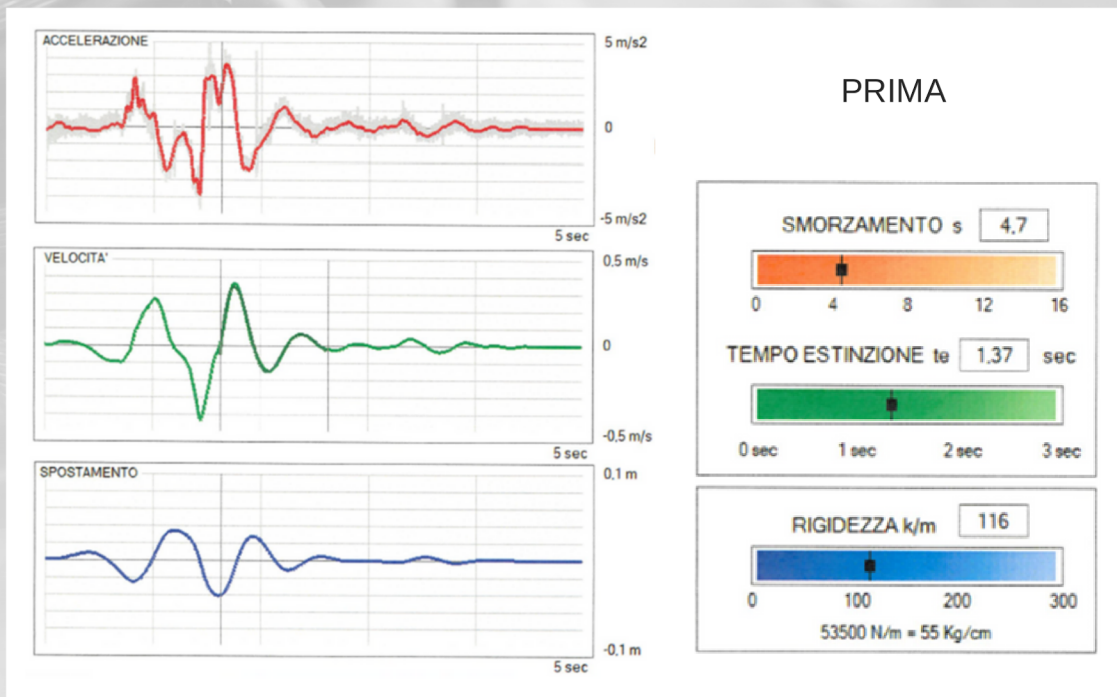
It is possible to carry out a comparative test between the axles by analyzing the spring, shock absorber and suspension mechanics separately.

In a few minutes, MM111 is able to provide the operator with a report on anomalies that require intervention.



Italian design MADE IN ITALY





Graph analysis:

BEFORE - all 3 graphs have higher amplitude

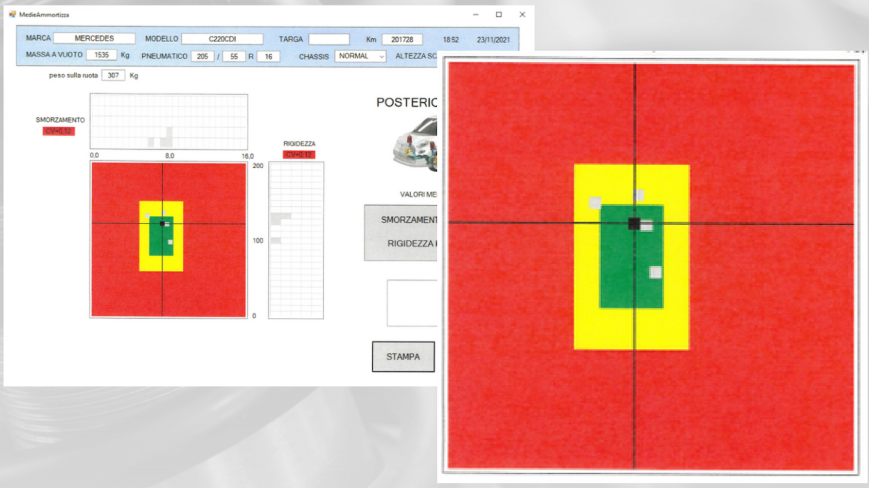
AFTER - more linear trend

Analyzing instead the three bands on the right we can see that:

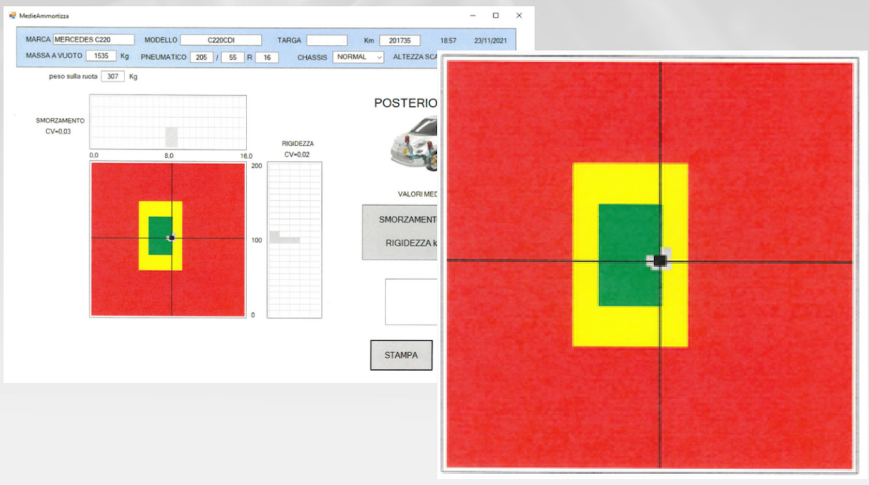
DAMPING - increased, a new shock absorber is more efficient

EXTINGUISH TIME - decreased, a new shock absorber is faster

STIFFNESS - there are no variations because the spring has not been replaced



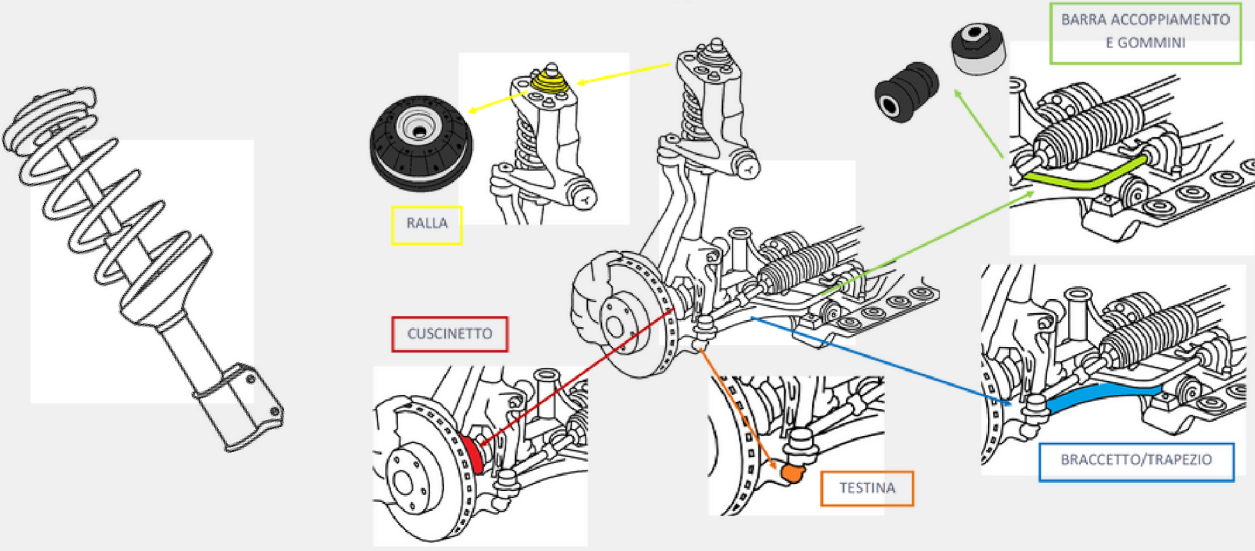
Values are not aligned,
mechanics NOT OK



Values concentrated
in a single point,
mechanics OK

The printout released at the end of the test is a valid aid in explaining to the customer the type of intervention, if any, that it is recommended to carry out on the car to improve safety and comfort.

In addition to checking the shock absorber, the analysis of the data collected allows the operator to highlight any mechanical problems on the following components:



Roll test

The roll test must be carried out with two sensors, without using the step. Checks if the nose sag of the car is balanced when braking.

By comparing the results of this test with those obtained from tests on the individual shock absorbers, it will be possible to obtain further data on the operating status of the suspension system of the car in question.

Also in this case the test will be carried out on a regular surface.

PROVA AMMORTIZZATORI

MARCA: Ford MODELLO: Mondeo TARGA: Km: 160000 17.06 12/10/2021
MASSA A VUOTO: 1540 Kg PNEUMATICO: 235 / 40 R 19 CHASSIS ant: NORMAL pos: NORMAL SCALINO: 0 mm

diagnostico f1.42 diametro pneumatico: 671 mm

VISUALIZZA DATI

Asse Ant: ROLLIO: 1

Ant DX: SMORZ: RIGID:

Pos DX: SMORZ: RIGID:

Ant SX: SMORZ: RIGID:

Pos SX:

DATI RIF: Derossi Massimo S.r.l. Via Sandigliano 181 Candelo (BI) Italia

EQUILIBRIO ASSE

NOME del FIL: rollo

MARCA: Ford MODELLO: Mondeo TARGA: Km: 160000 17.05 12/10/2021
MASSA A VUOTO: 1540 Kg PNEUMATICO: 235 / 40 R 19 CHASSIS: NORMAL ALTEZZA SCALINO: 0 mm

ACCELERAZIONE: SX DX (5 m/s²)

VELOCITA': SX DX (0.5 m/s)

SPOSTAMENTO: SX DX (5 cm)

ASSE ANTERIORE

BARICENTRO

ANGOLO DI ROLLIO

ABBASSAMENTO SX/DX: 11 mm 12 mm

DELTA SPOSTAMENTO: 1 mm

ANGOLO di ROLLIO: 0.0°

LARGHEZZA VEICOLO (modificabile): 1.5 m

CENTRO DI ROLLIO

ROLLIO: 1 mm (0 mm to 50 mm scale)

Derossi Massimo S.r.l. Via Sandigliano 181 Candelo (BI) Italia

STAMPA EXIT

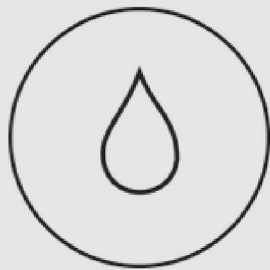


Derossi Massimo S.r.l.
Via Sandigliano, 181
13878 Candelo (BI)

Tel. 015-8129887 Cell. 346-3536253
P.IVA 02182190021

info@derossimassimo.it - www.derossimassimo.it

M **DEROSS**
MASSIMO s.r.l.



**BEYOND THE LIMITS
OF SELF-DIAGNOSIS**

THE COMPANY

1991 - Establishment of the company
as an equipment repairer

1997 - Change of headquarters
to expand spaces

2004 - Research and development
department started

2005 - The company becomes S.r.l.
- MM03 is born

2015 - Electrotechnical department
for internal production started

2016 - Change of location to double
the production spaces

2018 - Purchased new numerical control
equipment for production increase

2020 - New ecommerce

OUR GOALS



REDUCTION OF TIMES



SIMPLICITY OF DIAGNOSIS



OPTIMIZATION OF EARNINGS

EXAMPLE OF TRADITIONAL METHOD

Mechanical compression test: I have to remove injectors or glow plugs



2/4 hours depending on the model

EXAMPLE OF MM METHOD

- Compression test
- Cylinder balancing
- Engine rpm analysis
- Battery test without disassembling anything



10 minutes

THE METHOD

Today, time is of the essence and working following our method in the diagnosis phase can save a lot of it.

With our instruments, some diagnostic operations that cost to the operator several hours can be carried out in a few minutes.

Our method consists of three analysis phases that allow you to divide the system into hydraulic, electrical and mechanical parts and to find the fault more easily.

Ex: We have an engine that runs irregularly.

Some possible causes are:




- No power supply to injectors
(I perform an electrical test)



- Poor compression
(I perform a quick compression test)

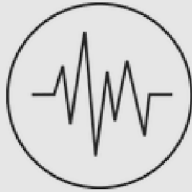


- Dirty/blocked injector
(I command the injector on the car to unlock it)



Electrical tests: I run them to determine if the component is getting the right power and the right command.

Eg. They allow you to check if:



- The injector is controlled by the ECU
- The component is powered in direct current or in pwm
- Wiring is ok
- I can generate a command to power the component as if I were the ECU

Mechanical tests: I run them to determine if the components I'm testing are working mechanically.

Eg.




- Compression test
- Control of movement of the egr valve plate
- Variable geometry turbine movement control
- I can clean the inside of some components in the ultrasonic tank

Hydraulic tests: I run them to determine if the common rail system reaches an adequate pressure.

Eg. They allow you to check if:



- The pump generates enough pressure
 - The injectors have a good tightness
 - The injectors open during the pulse
 - I can control the system pressure via the pressure/flow regulators as if I were on a test bench
- 

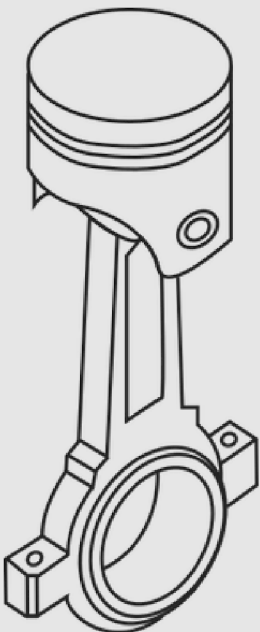


MM105



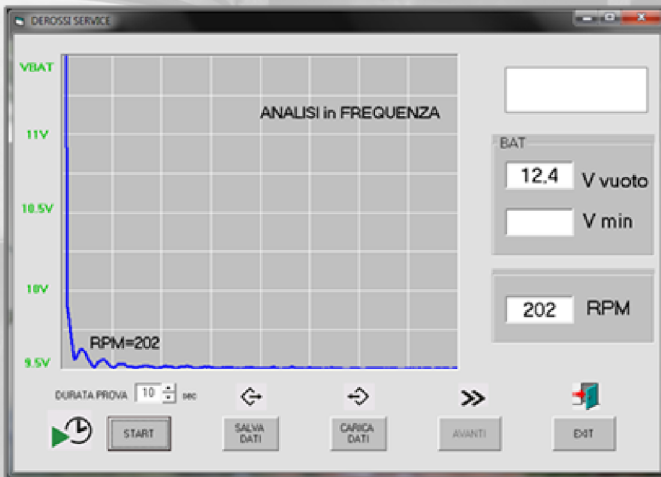
CHECK THE COMPRESSION IN 10 SECONDS

Tool that, connected to the vehicle battery, with a test of a few seconds, allows you to check the compression and alignment of the cylinders on diesel, petrol and LPG engines, without disassembling any component.

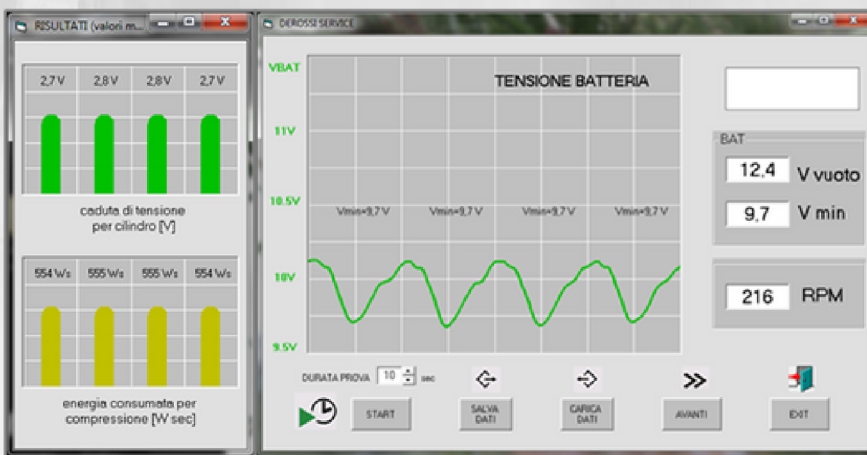


Eg. In case of car with problems, by carrying out a compression test it is possible to verify:

- State of compression
- Cylinder alignment
- Tightness of the bands
- Valve sealing
- Starter revolutions
- Starter motor absorption
- Battery status



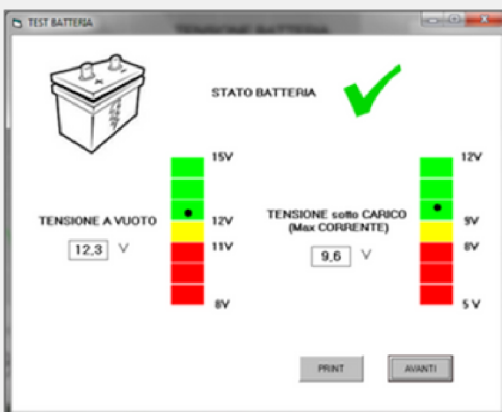
In a first phase, the engine rotation speed is precisely calculated (RPM=revolutions/minute)



The battery voltage trend is then analyzed during each single lap



Display of the absorbed electrical power and display of the relative compression calculated from the work done by the starter motor for each piston



Battery status

Possibility of printing a report with the test results.



MM107









Equipment for testing and checking injectors by means of some static and dynamic tests for eight cycle engines of the following types:

- Top feed petrol
- Side feed petrol
- Direct injection petrol/FSI/TSI/GDI/JTS
- LPG gas (Landi systems, BRC)
- UREA (SCR system)

The system allows you to:

- Wash the injectors in the ultrasonic tank
- Test the tightness, the flow, the spray
- Test the flow
- Simulate operation on cars with three automatic cycles

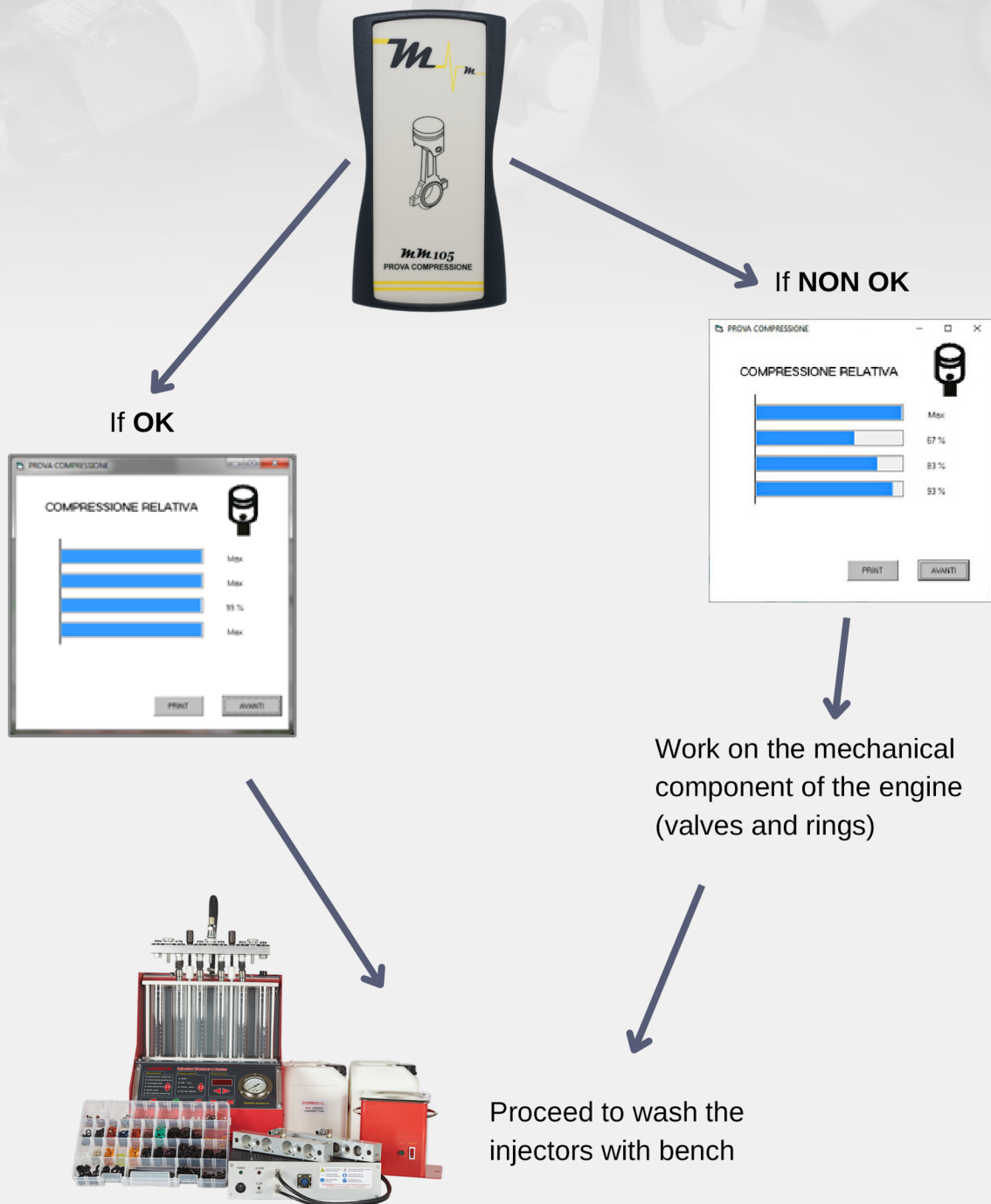
			
	X		
	X	X	
	X	X	X

When a car (powered by petrol, LPG or methane) arrives at the workshop and runs unbalanced, the most probable causes are:

- Ignition problem
- Mechanical problem on the engine (valves and rings)
- Injector problem

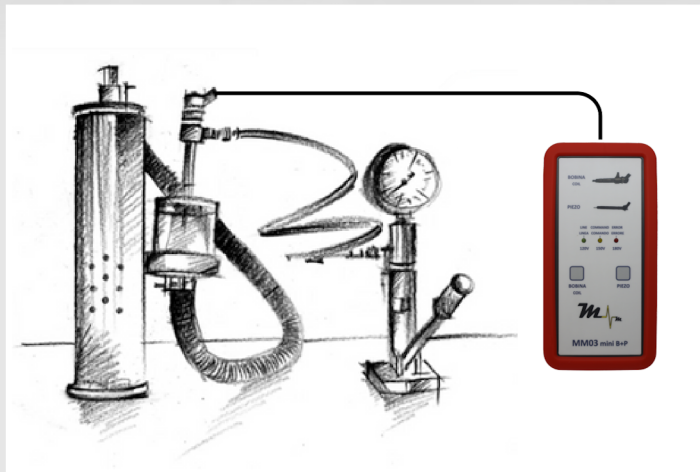
Once a possible ignition problem has been ruled out, we are faced with the following doubt: injectors or engine?

To find out, we can perform a compression test with MM105





MM03 MINI



Combined with an injector test pump and an aspirator, it is able to check the functionality of the C.R. injectors, both coil and piezoelectric, controlling:

- injection
- opening pressure
- spray jet
- tightness
- quantity of diesel recovery

It can be used in combination with MM107 to test piezoelectric petrol injectors individually.



MM514



Fuel pressure test kit with fittings and pressure gauge from 0 to 10 Bar.

It allows you to work with both diesel and petrol systems.

Measures fuel pressure in low pressure systems.

The kit includes a pressure gauge for low pressure use and a set of adapters and hoses.

Adapters have quick connectors for easy connection.



MM03



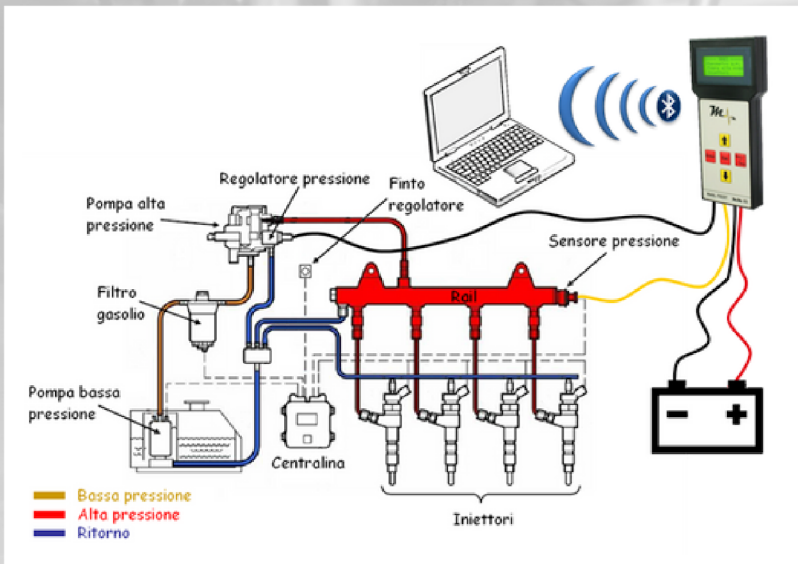
ON CAR MM03 allows you to carry out all the necessary checks to establish whether the problem is of an electrical or hydraulic nature, identifying which component generates the fault.

Eg. 1 - On a car that does not start and there is a doubt that the pump and injectors are the problem, it is possible to test them on the car without disassembling them.

Eg. 2 - If used to test a common rail system it is possible to:

- Start the engine by applying power to the regulator
- Exclude or confirm if the problem is hydraulic in nature
- Bring the pump to 1100 bar to check its efficiency
- Check the flow and pressure regulators
- Carry out leak test on injectors
- Analyze the rail sensor

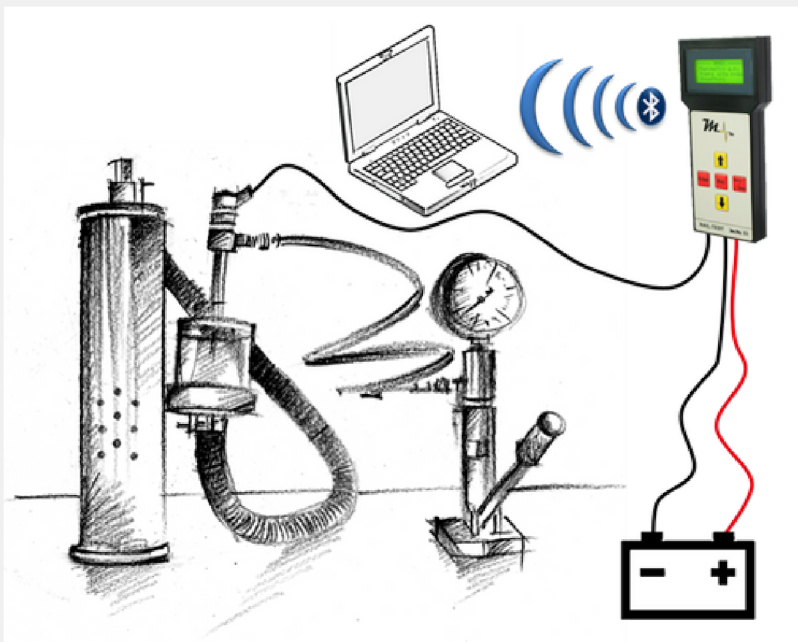
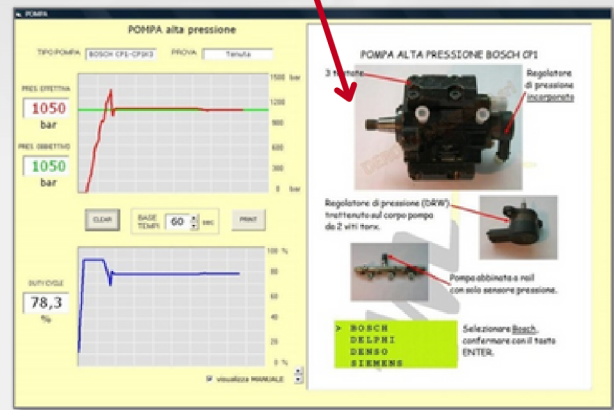
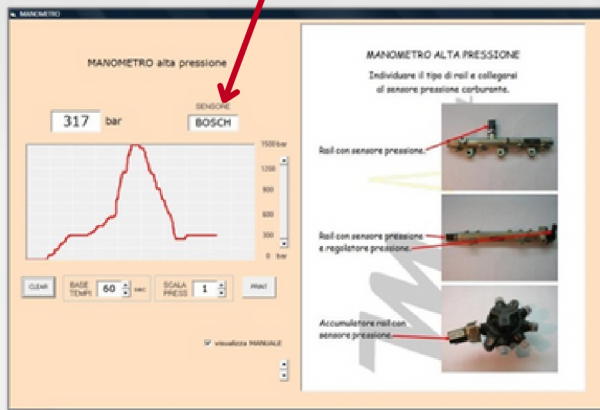
ON THE BENCH (with manual pump) MM03 allows you to test the coil/piezoelectric injectors to check their effective efficiency.



MM03 connection on car

Step-by-step didactic explanation

Example of test visualization



MM03 connection to the bench with aspirator and manual pump



MMX



MMX is a test bench, useful for testing Common Rail pumps and injectors of all types available on the market.

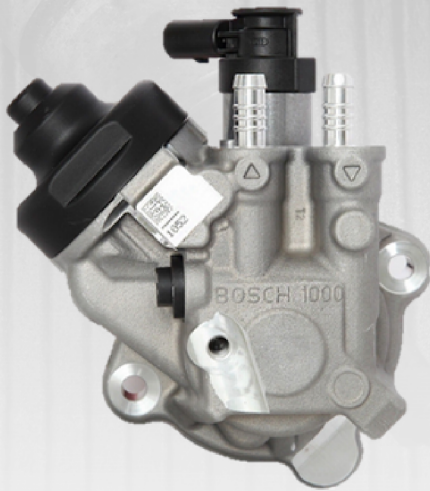
The bench autonomously recognizes the type of injector (coil / piezo) and controls it accordingly.

The bench allows you to perform the following tests:

- High pressure pumps efficiency
- Control regulators
- Rail leakage control
- Injector seal
- Comparative injectors flow rate tests in START-UP, MEDIUM LOAD, FULL LOAD, PRE-INJECTION SIMULATION, PILOT INJECTION

Kit CP4.1 e CP4.2

Allows complete overhaul of Bosch CP4.1 / CP4.2 pumps



Thanks to the new software it is possible to view the correct functionality of the pump:

- managing the pressure of the pump in question
- checking the low pressure return of the rail through a flow sensor
- opening / closing the flow regulator on the pump

Availability of various spare parts:



Gasket and oil seal kit



Tappet



CAM shaft



Spare parts kit



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