

MOD. 6053 DIVAS



OPERATING INSTRUCTIONS



TECH SUPPORT HOTLINE
+1 (888) 685-7287
info@ANSEDdiagnostics.com

6053 DIVAS EN

Maggio 2015



Read the instructions carefully before using the appliance and keep them for future use. This document is an integral part of the product it refers to and describes its technical features and the methods of use and storage.

For comments and information relating to this product

EOS S.r.l.

Motorscan® Division
Via Monte Aquila, 2 Corcagnano
43124 PARMA – Italy
Tel. +39 0521 631411
www.motorscan.com
sales@motorscan.com
support@motorscan.com

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Dear Customer,

Congratulations and thank you for purchasing a product from the MOTORSCAN diagnosis range for your workshop.

The 6053 DIVAS is a High-Tech device available for the 6050 Memobike, which extends the range of diagnostic functions, through a series of additional applications, necessary for the correct operation of the 2-wheel vehicles:

- Synchronisation of throttle bodies on carburettors and electronic injection systems;
- Dynamic analysis of the pressure of the intake pipes;
- Reading of motor rpm;
- Synchronisation procedures integrated with diagnostic functions of the motor control unit (block of the minimum regulators, reset TPS and / or self-adapting parameters, faults analysis in the memory, check of correct working conditions, etc.);
- 2 analogue inputs for the dynamic analysis and data acquisition of the vehicle sensors;
- Built-in microphone.

Through the 6053, it is possible to synchronise the throttle bodies according to the manufacturer's recommendations. The graphic display by means of coloured bars, the pressure values, the minimum and maximum indications for each channel and the motor rpm in real time, allows for precise and intuitive operations. The green colour and an acoustic warning signal inform the operator of the perfect alignment of the intake pipe pressures being analysed.

In case of difficulty in reaching synchronisation, the dynamic and simultaneous analysis of the pressures of each channel by means of colour graphics, allows for the identification of problems regarding the tightness of valves, cylinders and / or pipes.

The integration of the synchronisation with the functional diagnostics, allows, without the need for additional equipment, for the preparation of the correct movement by acting on the block of minimum regulators (if provided) or for the completion of the procedure with all the electronic resets recommended by the manufacturer's service manual.

Through the connection to the sensors installed on the vehicle, 2 analogue inputs allow for monitoring in real time and save the acquired data, extending the diagnostic capacity of the instrument. The user can indulge in a series of activities that range from the simple dynamic display to a comparative analysis between analogue inputs and the values indicated by the control unit, in order to attain a high-speed acquisition and processing of the signals monitored.

Read the use and maintenance instructions before using the 6053 DIVAS. You can make the most of the device's multiple functions as well as the characteristics, whilst ensuring safe conditions during the tests.

Our dealers and our CUSTOMER SERVICE CENTRE are at your disposal to resolve any problems and to provide you with all the information you need.

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IMPORTANT INFORMATION REGARDING PERSONAL SAFETY

GENERAL RULES OF CONDUCT AND SAFETY FOR ACTIVITIES IN WORKSHOPS AND SIMILAR ENVIRONMENTS.



ASPHYXIATION HAZARD

PETROL ENGINES

The exhaust gases of petrol vehicles contain carbon monoxide, which is a colourless and odourless gas that, if inhaled, may cause severe physical problems.

Take particular care if you work inside ditches, as some components of the exhaust gas are heavier than air and therefore, will deposit at the bottom of the ditch.

Pay attention to vehicles with gas systems.

DIESEL ENGINES

The exhaust gas emitted by a diesel motor has a composition that is not always the same. It can change based on the type of motor, suction, conditions of use and the composition of the fuel.

The diesel exhaust is composed of gas (CO, CO₂, NO and HC) and particles (soot sulphates and PAHs).

The small carbon particles, which form the soot, remain suspended in the air, and are therefore breathable. Moreover, toxic components are present, even if in small quantities.

SAFETY MEASURES:

- Always ensure good ventilation and intake (especially in ditches).
- In closed rooms, always activate the extraction system.



DANGER OF CRUSHING

If the vehicles are not correctly locked through mechanical systems, the risk of being crushed against a work bench remains present.

SAFETY MEASURES:

Make sure that the vehicle is blocked by pulling the hand brake and locking the wheels.



DANGER OF INJURY

The motors, stopped and running, have moving parts (belts or other), which may cause injuries to hands and arms.

Among the various parts of the engine, in particular, pay attention to the electric fans, as they may be unexpectedly activated, even when the engine is off.

SAFETY MEASURES:

- With the motor switched on, do not insert hands into the area surrounding moving parts.
- When working in the vicinity of the electric fan, first cool the engine and remove the fan plug from the motor.
- Keep the testing equipment connection cables away from moving parts of the engine.



DANGER OF BURNS

There are components inside the engine (manifold of the exhaust gases or other), which can reach very high temperatures, as well as some sensors.
It is therefore necessary to pay attention not to touch these objects.

SAFETY MEASURES:

- Do not install the testing equipment connection cables above or in the vicinity of hot parts.
- Do not keep the engine running after the inspections.



DANGER OF FIRE OR EXPLOSION

When carrying out work on the fuel system (petrol pump, injectors, petrol and carburettor, etc.), there is danger of fire or explosion due to the fuel used and / or the vapours formed by them.

SAFETY MEASURES:

- Switch off the ignition.
- Leave the engine to cool down.
- Do not use naked flames or sources of sparks.
- Do not smoke.
- Collect the fuel that comes out.
- Activate the fans in closed rooms.



SOUND LEVEL

During the measurement on the vehicle, noise exceeding 90dB may occur, especially at high engine speeds.

If these sources of noise persist for a prolonged period, the hearing of the person in question may be damaged.

SAFETY MEASURES:

- The user must, if necessary, protect the work place close to the points in which tests are carried out from noise emissions.
- The operator must use, if necessary, personal protective equipment.



DANGEROUS VOLTAGE

When handling test instruments, you will come into contact with parts of the engine to which voltage is applied, there is therefore the danger of an electric shock, for example, due to damaged connections.

This applies to the primary and secondary circuit of the ignition system and for connection of the test devices.

SAFETY MEASURES:

- To connect the test instrument, only use cables with which it is equipped, check that the insulation is not damaged.
- During the control and adjustment operations with the engine running, it is necessary to pay attention not to touch live parts of the vehicle.
- Make the test connections only with suitable systems (test cables, specific adapter cables, etc.).



INTOXICATION HAZARD

The pipes used for the withdrawal of exhaust gas, if exposed to high temperatures (above 250°C, or as a result of fire), release a highly toxic gas, which in the case of inhalation, can be harmful to the operator's health.

MISURE DI SICUREZZA:

- In case of inhalation, consult a doctor immediately.
- To eliminate the combustion residues, use neoprene or PVC gloves.
- The fire residues can be removed with a solution of calcium hydroxide. In this way, calcium fluoride is formed and can be removed with water.



DANGER OF CORROSION

Acids and lye can cause corrosion to the skin if this is not protected.

The condensate that remains in the gas pick-up hose and in the condensate separator unit contains acids.

When replacing the oxygen sensor (O₂), pay the utmost attention as it contains highly corrosive substances.

Even in the event of breakage of a liquid crystal indicator, corrosive liquid may leak, with which contact, inhalation or swallowing must absolutely be avoided.

SAFETY MEASURES:

In case of contact with skin, wash immediately with water and seek medical advice.

In case of inhalation or swallowing, consult a doctor immediately.

IMPORTANT INFORMATION REGARDING THE SAFETY OF THE INSTRUMENT

MOTORSCAN equipment ensures a high level of protection against the risk of electric shocks; the earth connection is mandatory in the presence of tools with metal parts.

- It is the responsibility of those who install the appliance to connect it to an electric plug correctly connected to the earth. Call for technical assistance before using an adapter or an extension; these devices could interrupt the earthing circuit.
- The connection of the device to an electrical socket, not correctly connected to the electrical system, may cause severe electric shocks.
- To obtain constant protection against the risk of electrical shocks, follow these indications:
- Connect the appliance only to sockets with the correct voltage; in case of doubts regarding the voltage of the socket being used, refer to the body providing the electrical energy.
- If the appliance has other cables, as well as those for the power supply, it is necessary to connect them to the relative connectors before connecting the power cable to electrical outlets; Moreover, before removing them, it is necessary to disconnect the power cable from the sockets.

During operation and maintenance, scrupulously follow the instructions below:

- Replace the fuses (if present) with others of equal value, (see plate or manual).
- Do not open the lid as there is a risk of electric shock. This work must be carried out only by a qualified technician and never before having removed the power supply cable.
- This may cause danger or electric shock if different operations are carried out to those described in this manual, in particular, performing repairs incorrectly.
- If the 6053 DIVAS does not work correctly after having performed the operations according to the operating instructions, contact a technician from the assistance service.
- Use only original spare parts, any surrogate may not have the same safety features.



ATTENTION: In case of repairs, always refer to qualified technical staff.

Do not use or place the 6053 DIVAS in a location in which it is exposed to the sun for a long period of time, or in the vicinity of objects at high temperature (stoves, heaters, etc.): the maximum operating temperature is 45 ° C. Avoid movements from a cold place to a warm place and vice-versa: the possible formation of condensate within could cause damage to the electronic circuits. In the case of displacement, wait a few minutes before proceeding with the start-up.

Protect the appliance from rain or from excessive humidity in order to prevent irreparable damage. Use the 6053 DIVAS only and exclusively with the MEMOBIKE diagnostic device.

OPERATING INFORMATION

To prevent toxic gas contamination, it is advisable to provide for use in a sufficiently ventilated environment, or bring the gas outlet pipe and condensate to the outside.

Do not move the appliance by dragging it by the cables connected to it. Do not use the appliance by positioning it on the side or upside down: the 6053 DIVAS was not designed to operate in these positions. Carry out all connections with the engine of the vehicle in question switched off. Make sure that all the cables are away from hot parts (over 50 ° C) or those in motion.

Disconnect all connections to the engine before moving the vehicle in question.

Disconnect the 6053 DIVAS from the mains socket when it is not used for a long time.

CLEANING

When it is necessary, clean the external surfaces of the APPLIANCE: do not use alcohol-based detergents, ammonia or benzene to clean: use only neutral detergents using a soft, slightly moistened cloth.



ATTENTION! Before proceeding with the cleaning operations, disconnect all cables.

SYMBOLS

This section describes the symbols used on the appliance.



ALTERNATE CURRENT



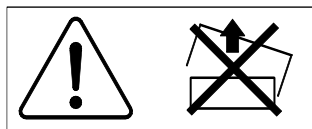
EARTH PROTECTION



**ATTENTION!
REFER TO INSTRUCTION MANUAL**



**ATTENTION !
RISK OF BURNS**



**ATTENTION!
RISK OF ELECTRONIC SHOCK**

ISX1279

**ATTENZIONE !
DO NOT REMOVE THE COVER
(operation for qualified technicians)**

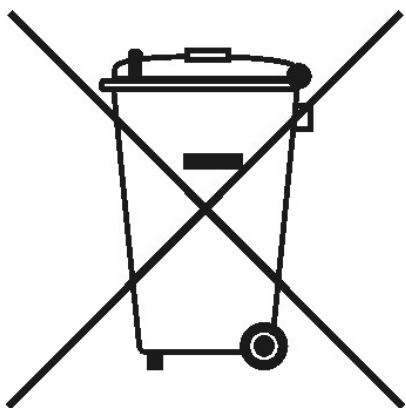


CE MARK

Indicates the conformity of the product with the Essential Safety Requisites, envisioned by the European Directives applicable to the product itself.

INFORMATION FOR USERS

Pursuant to art. 13 of Legislative Decree 25 July 2005, no.151 "Implementation of the Directives 2002/95/EC, 2002/96/EC and 2003/108/EC, relative to the reduction of use of dangerous substances in electric and electronic appliances, as well as disposal of waste". The separate collection of this appliance at the end of its life is organised and managed by the manufacturer. The user who wishes to dispose of this appliance must therefore contact the manufacturer and follow the system that the latter has adopted to allow for the selective collection of the appliance at the end of its life. The adequate separate collection for the successive initiation of the decommissioned equipment for recycling, treatment and environmentally-compatible disposal contributes to preventing possible negative effects on the environment and on health and favours the re-use and / or recycling of the materials that make up the equipment. The illegal disposal of the product by the holder entails the application of administrative sanctions envisioned by the regulations in force.



Registration with the National Register of Manufacturers of Electrical and Electronic Equipment n° **IT14010000008257**

The symbol of the barred waste bin illustrated on the appliance or on the package indicates that the product, at the end of its useful life, must be collected separately with regard to other waste.



1.0 – DESCRIPTION OF THE APPLIANCE

1.1 GENERAL FEATURES

The appliance is sold in a practical carrying case

1.2 TECHNICAL FEATURES

Pressure sensor channels	n. 4
Pressure sensor interval	da 15 KPa a 115 Kpa (da 150 mBar a 1150 mBar)
Pressure sensor precision	+ - 1 mBar
Speed of pressure sensor sampling	1 ms
Unit of measurement of the selectable pressure	mBar, Kpa, cmHg, A/D steps
Analogue / digital inputs (AUX)	0-5 volt and 0-12 volt
Sensor power supply output (AUX)	5 volt stabilised
Engine rpm interval	from 400 to 6000 rpm
Engine rpm interval	2 / 4 times
Power supply	Auto-power from internal battery 6050
Additional features	Atmospheric pressure display Pressure sensor self-calibration
Pipes	4x7 6 m (resistant to chemical agents) 5x8 0.5 m (silicone / heat resistant)
Adapters	n. 4 M5 connector n. 4 M6 connector n. 1 T

1.3 – FRONT VIEW / CONNECTIONS



1.4 - 6053 DIVAS STANDARD EQUIPMENT

	PHOTO
<p>Shockproof case 22ST6053GR</p>	
<p>Device SL6053 DIVAS</p>	
<p>Rubber hose 2501TB47T</p>	
<p>ADAPTERS</p>	
<p>AUX CABLE Outdoor sensor connection accessory SL010549</p>	

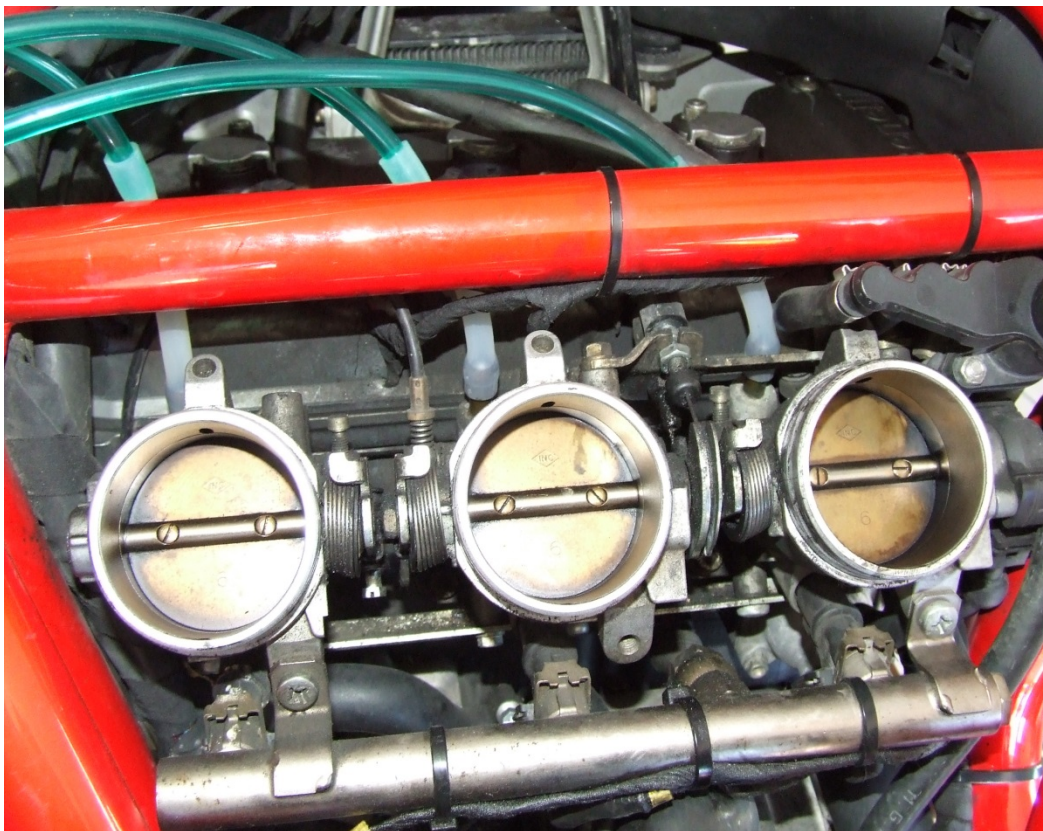
2.0 – CONNECTION TO MEMOBIKE

Connect the 6053 DIVAS to the MEMOBIKE by means of the relevant cable.



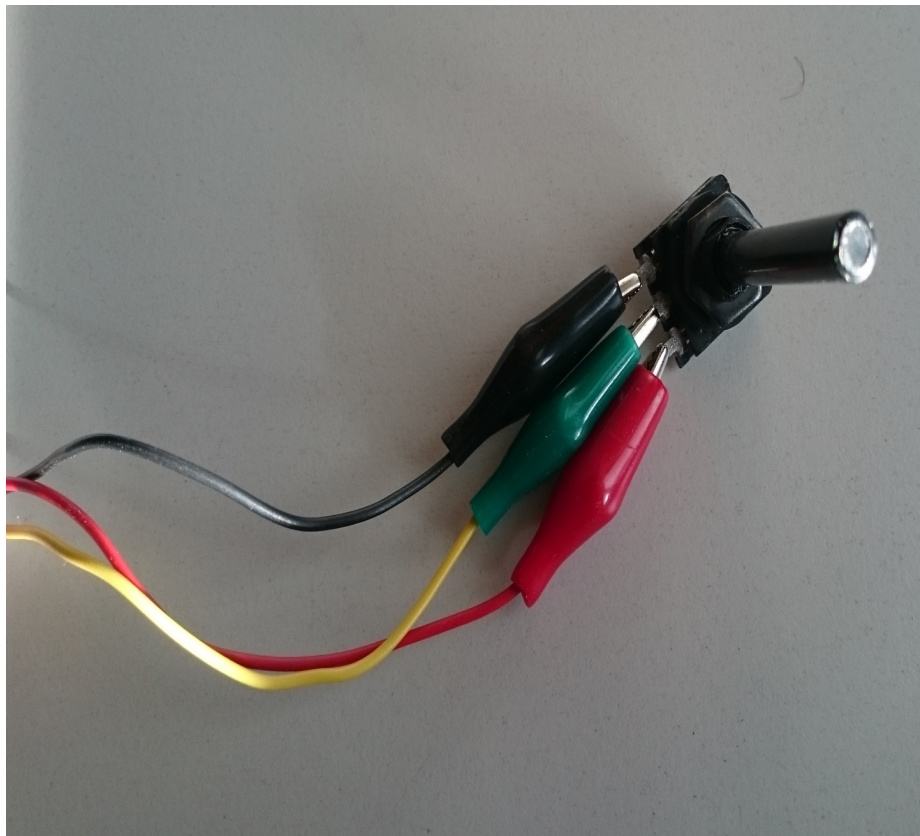
2.1 – CONNECTION TO DEPRESSION CONNECTORS ON THE VEHICLE

1. Connect the rubber hoses (2501TB47T) to the depression connectors on the vehicle (from 2 to a maximum of 4).
2. To gain access to the connectors at times, it may be necessary to remove part of the motorcycle, check the vehicle's technical manual for further details on the positioning of the same.
3. If necessary, use adapters in silicone for connectors of a larger diameter.



2.2 CONNECTION TO THE VEHICLE'S AUXILIARY SENSORS

1. Connect the AUX SL010549 cable to the appliance by means of a specific connector.
2. Connect the power supply clamps to the sensor. (Red / black cable for 5V sensors, yellow / black cable for 12V sensors).
3. Connect the AUX cable to the sensor's output pin. (green and yellow 5V sensors, white 12V sensors)

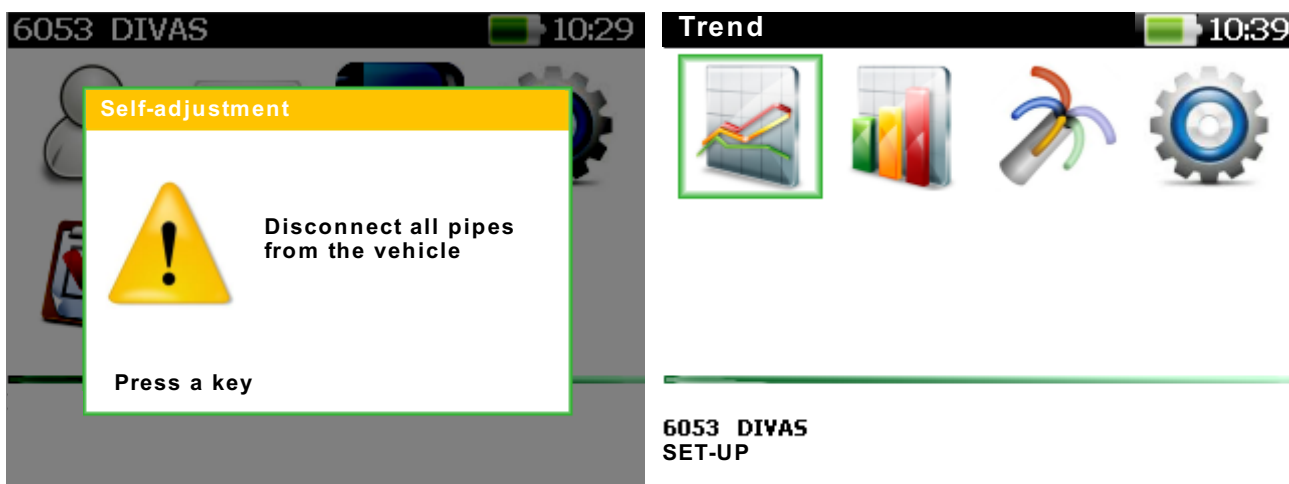


3.0 - OPERATION

After having set up the connection according to that indicated in paragraph "CONNECTION TO MEMOBIKE" (Paragraph 2.0), in the MEMOBIKE SETUP menu, the following screen will appear, with the icon to access the functions of the 6053 DIVAS.



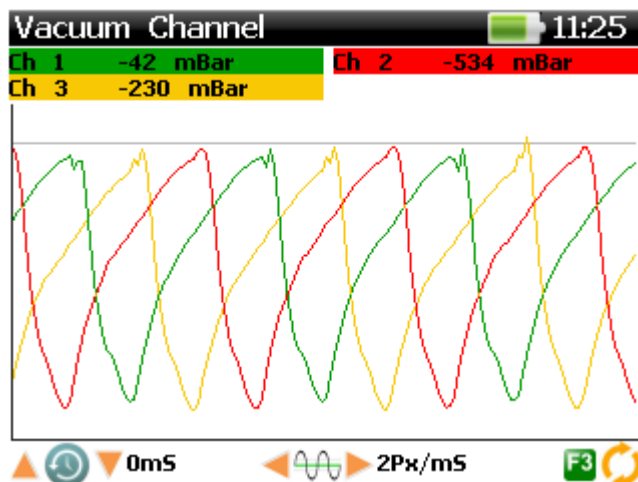
Pressing the icon with the ENTER key on the instrument, the operator views the message informing them to keep the pipes (2501TB47T) disconnected from the vehicle; this will allow the instrument to carry out a self-adjustment, therefore, the following menu will be displayed:



This menu includes the list of functions currently available with the 6053 DIVAS.

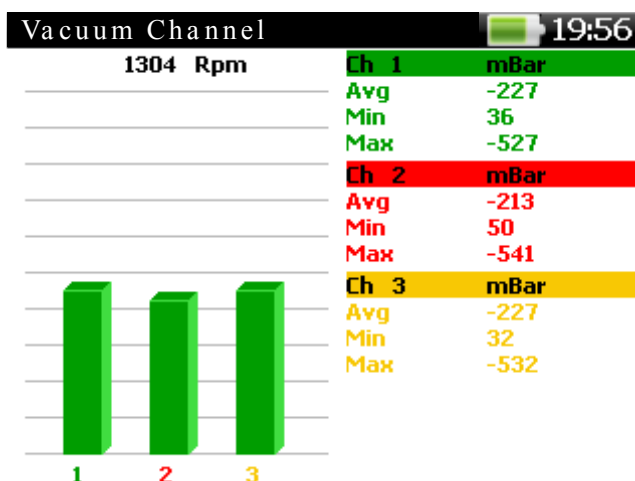
3.0.1 - PERFORMANCE

It allows you to graphically display the depression created on the suction ducts. See Paragraph 3.1 "DEPRESSION GRAPH".



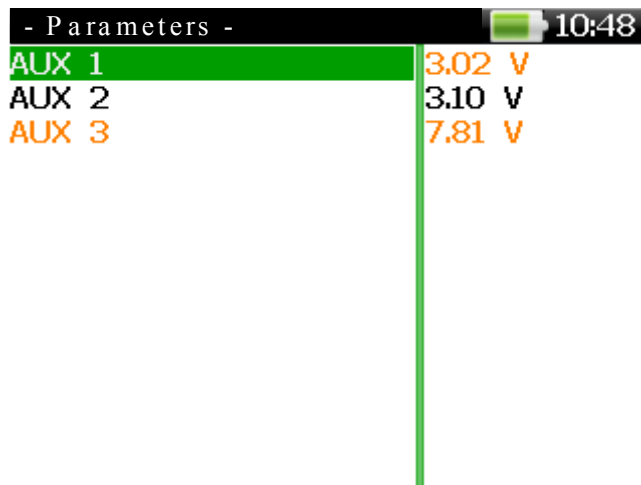
3.0.2 - SYNCHRONISATION

It allows you to display a graph with columns, which allows for the synchronising of the throttle bodies. See Paragraph 3.2 "THROTTLE BODIES SYNCHRONISATION".



3.0.3 – AUX CHANNEL

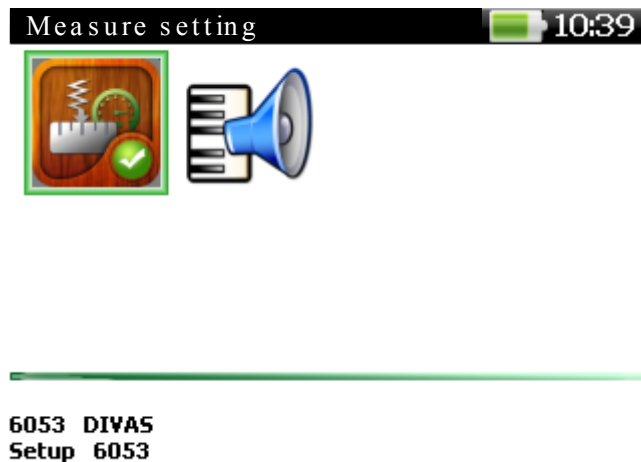
It allows you to view the output values of the auxiliary sensors connected to the AUX cables. See Paragraph 3.3 "AUXILIARY SENSORS".



- Parameters -		10:48
AUX 1	3.02 V	
AUX 2	3.10 V	
AUX 3	7.81 V	

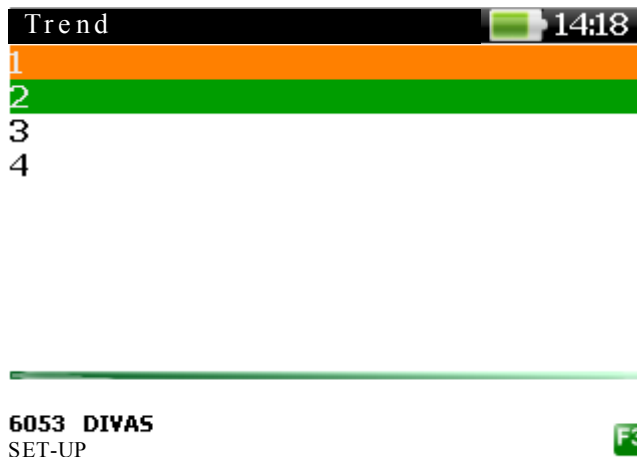
3.0.4 – SETTINGS MENU


It allows you to configure various 6053 DIVAS settings. See Paragraph 3.4 "SETTINGS".



3.1 – DEPRESSION GRAPH

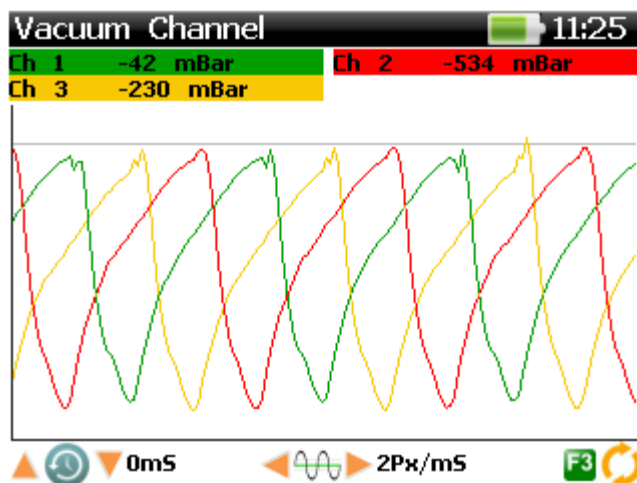
This function allows the user to view the curve of depression measured at each intake pipe.



Before selecting the list of channels to be analysed via the button  connect the pipes to the suction pipes located at the inlet of the manifold (Paragraph 2.1) and start the engine.

F3 to confirm the selection.

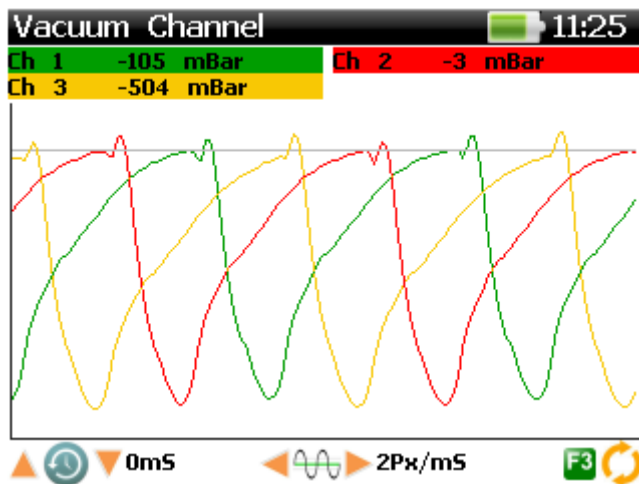
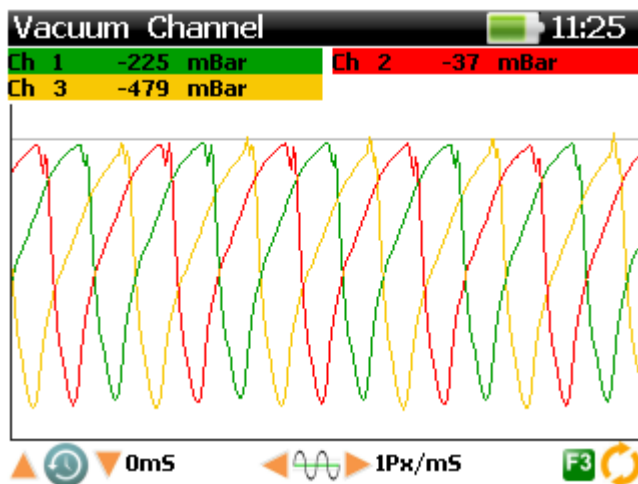
The 6053 DIVAS will now begin to perform sampling on the depression trend, showing values associated with each suction pipe with a numerical value and in a graphic mode.



The grey line shows the atmospheric pressure calculated during the self-adjustment.

Use the UP / DOWN ARROW keys to increase / decrease the update speed of the graph.
Use the RH/LH ARROW keys to increase / decrease the amplitude of the depression wave.
Press F3 to pause or restart the data acquisition.

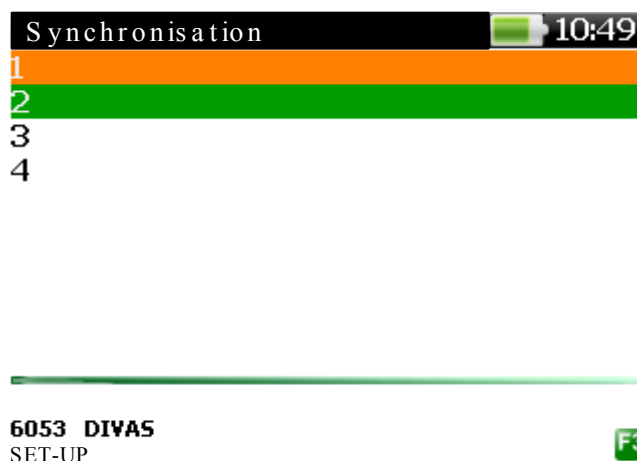
ATTENTION: The 6053 DIVAS, after having completed a certain number of samples, will place the display in pause; at this point, you need to restart it using the F3 key. This limitation exists in order to increase the precision of the data taken into consideration.




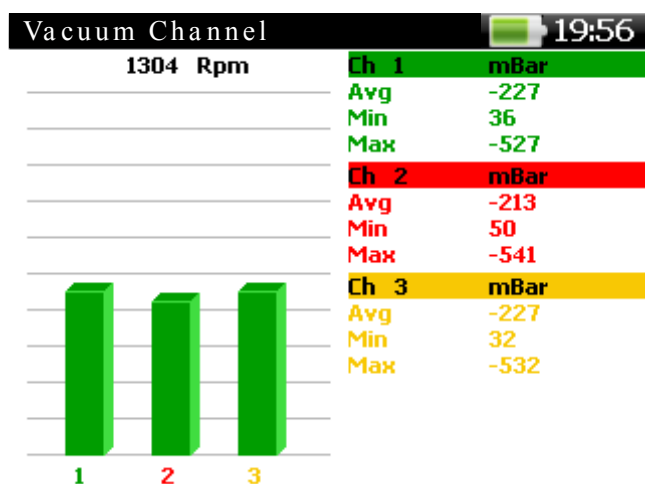
3.2 - THROTTLE VALVE SYNCHRONISATION

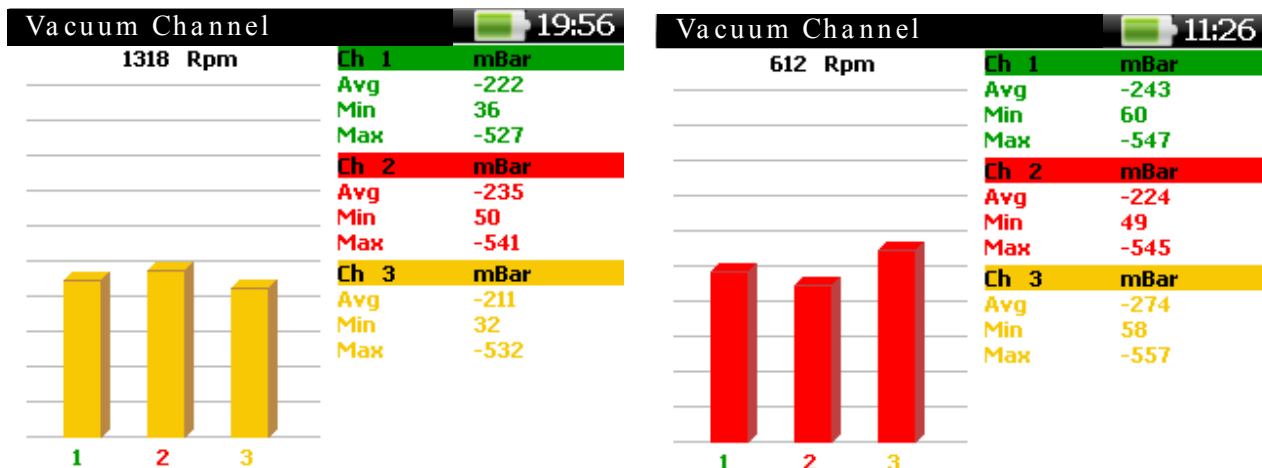
It allows you to display a graph with columns, which enable you to analyse the state of the motorcycle throttle bodies' synchronisation, based on the average depression created inside the suction ducts in each cylinder.

For perfect synchronisation, follow the instructions in the technical manual of the motorcycle taken into consideration, since the procedure may differ from vehicle to vehicle (e.g. it is possible to disconnect the stepper or other operations to perform synchronisation).



Before selecting the list of channels that are to be analysed via the button  connect the pipes to the suction pipes located at the inlet of the manifold (Paragraph 2.1) and start the engine. F3 to confirm the selection.





On the left-hand side of the screen, a graph with columns displays the average value of the depression for each suction duct selected.

The columns take on a different colour depending on the state of synchronisation; act on the throttle body adjustment screws until the columns turn GREEN.

- GREEN - Throttle bodies synchronised
- YELLOW - Throttle bodies nearing synchronisation.
- RED - Throttle bodies not synchronised.

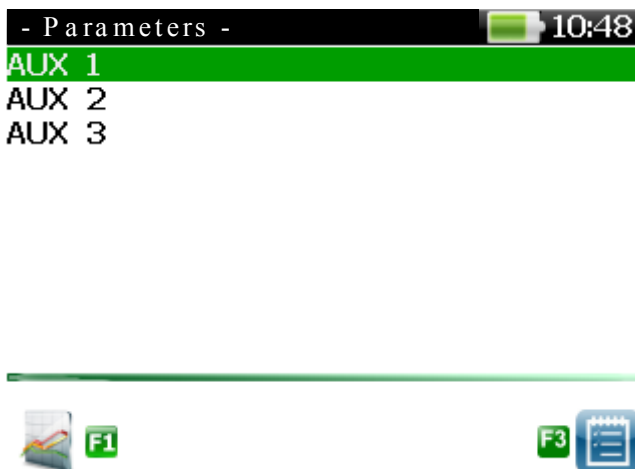
On the right-hand side of the screen, the average (AVG), the minimum (MIN) and the maximum (MAX) values of the depression during the test are shown.

The upper part of the graph shows the number of motorcycle engine revs.

ATTENTION: The GREEN value in the columns determines a correct synchronisation of the throttle bodies, ONLY if these function perfectly and if there are no problems in the sealing of valves, cylinders and / or pipes. This can be checked by analysing the depression curve shown in the "Depression graph" (3.1).

3.3 – AUXILIARY SENSORS

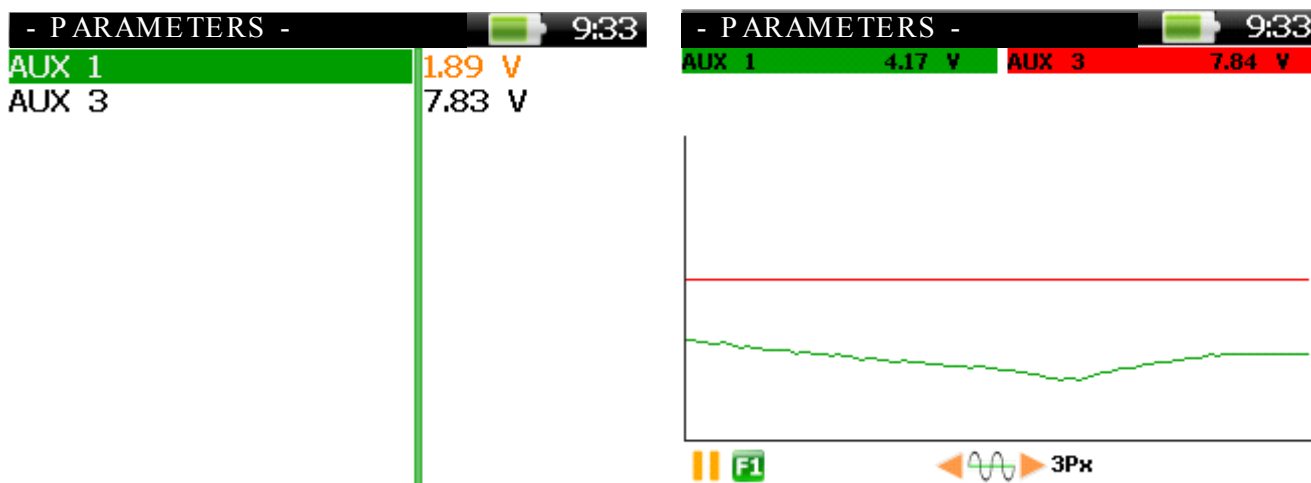
This function makes it possible to view the output voltage of the auxiliary sensors connected to the AUX cables of the cable SL010549.



Before selecting the list of auxiliary channels to be analysed via the button connect the cables to the auxiliary sensors to be analysed (Paragraph 2.2).

- F3 to confirm the selection and display the data in a table.
- F1 to confirm the selection and display the data in a graph.

During the display, it is possible to switch between modes by pressing the associated function keys (F1 for graphic mode, F3 for table mode).

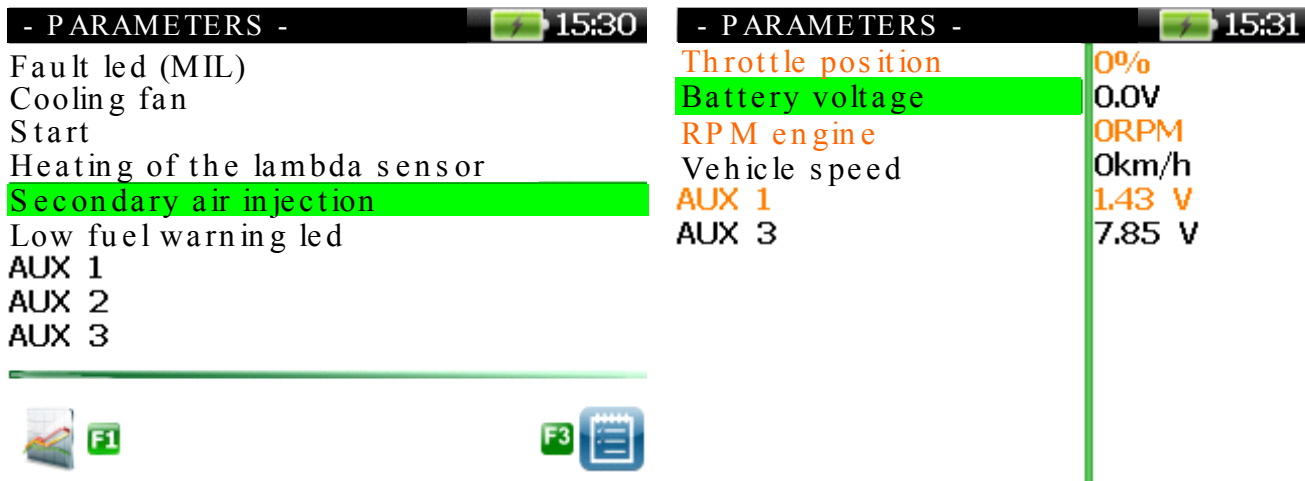


During the graphic display, it is possible to pause and restart the data acquisition by pressing the F1 key.

During the graphic display, use the RH / LH arrow keys to increase / decrease the amplitude of the signal waveform.

The data relating to the auxiliary sensors is available in the list of control unit parameters during a diagnosis session.

ECU parameters will appear at the bottom of the list and they can be selected like all other data.

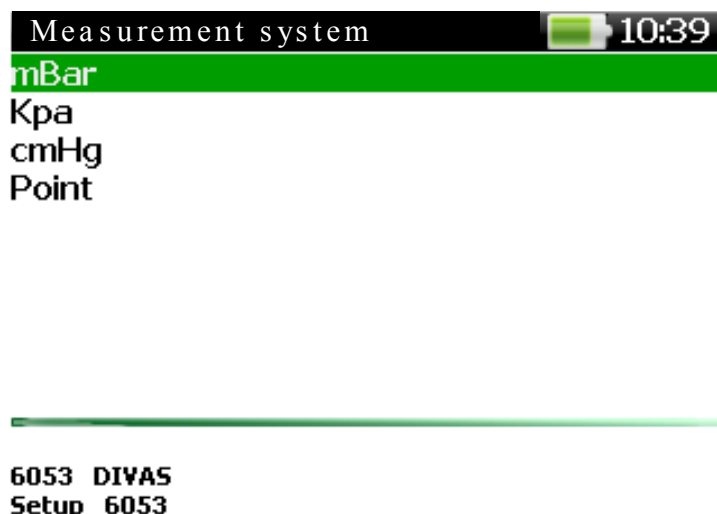


3.4 – SETTINGS

This function allows you to configure various 6053 DIVAS settings.

3.4.0 MEASUREMENT SYSTEM

It allows you to set the unit of measurement used by the 6053 DIVAS for the depression values.



- Mbar – millibar
- Kpa – kilopascal
- cmHg – centimeters of mercury
- Point – Absolute value of the pressure sensor of the 6053 DIVAS

3.4.1 VOLUME

It allows you to enable / disable an acoustic signal generated during the synchronisation (3.2) in the event that there is a graph with GREEN columns. Use the RIGHT / LEFT ARROW keys to activate / deactivate the audio.

Volume  10:39



Beep ON

6053 DIVAS
Setup 6053



*EOS S.r.l.
Motorscan[®] Division
Via Monte Aquila, 2 Corcagnano
43124 PARMA – Italy
Tel. +39 0521 631411
www.motorscan.com*



*ANSED Diagnostic Solutions LLC
1528 Walnut Street
Suite 1600
Philadelphia, PA 19102
Tel. +1 (888) 685-7287
www.ANSEDdiagnostics.com*

