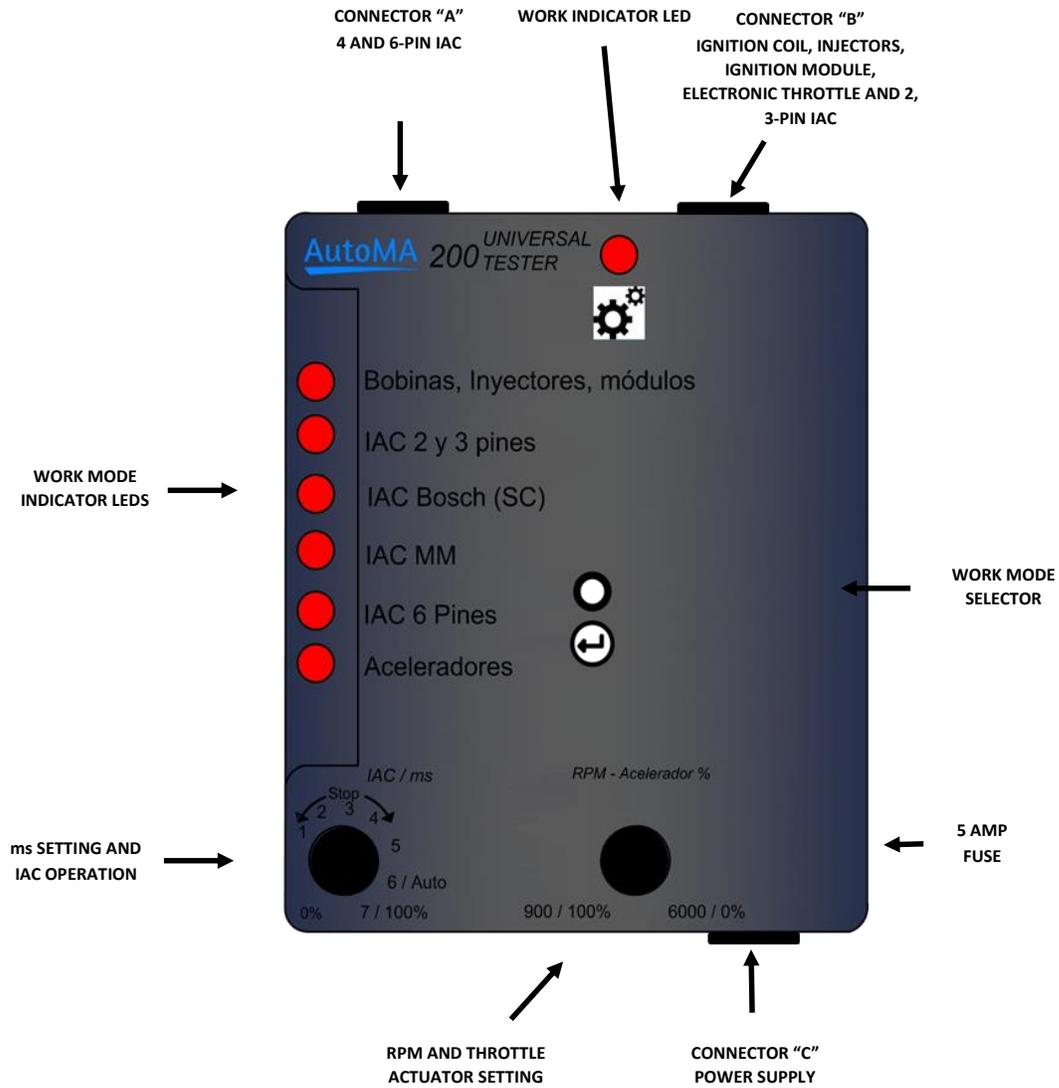


USER'S MANUAL

AutoMA 200



RECOMMENDATIONS AND PRECAUTIONS

- ✓ The power supply for the equipment must be 12VDC at least 10 Amperes, if a higher voltage source is used, the AutoMA 200 could be damaged.
- ✓ The harness cables which are connected to "A" or "B" should not make contact with each other because it would cause a short circuit that can damage components in it.
- ✓ At the time of the test must ensure that automotive components are free of oil, grease, gasoline or some other material that may alter the test or damage the equipment.
- ✓ When testing ignition coils, caution should be taken with high voltages as it can damage the equipment and yourself.
- ✓ Don't use fuses higher than 5 Amps.

Function: Test various components such as IAC, Ignition coils, Injectors, Ignition Modules and electronic throttle that exist in the market easily and simply by simulating control signals to test out and inside the vehicle.

Features: Generation of power and control signals to activate and control IAC valves, Injectors, Ignition coils, Ignition Modules and electronic throttles.

- ✓ Protected by control of overload and short circuit.
- ✓ User friendly control panel management.
- ✓ Indicators to select the work mode and adjusting the control signals.
- ✓ Adjusting RPM 900 to 6000 ($\pm 5\%$),
- ✓ Adjusting pulse width 1 to 7 milliseconds ($\text{ms} \pm 10\%$).
- ✓ Setting synchronized signals for opening and closing IAC valves.
- ✓ Supports up to 5 Amp continuous load and 12 Amp peaks.
- ✓ Universal connectors to perform quick and effective testing.

Contents:

- 1 AutoMA 200 Universal Tester.
- 5 Harnesses.
- 1 User's manual.

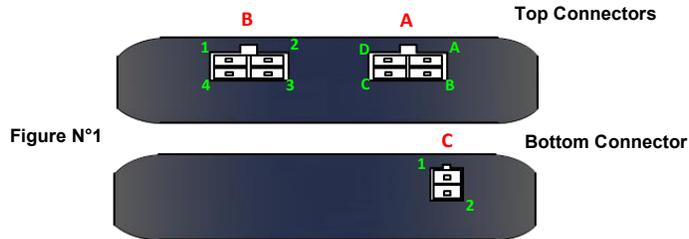
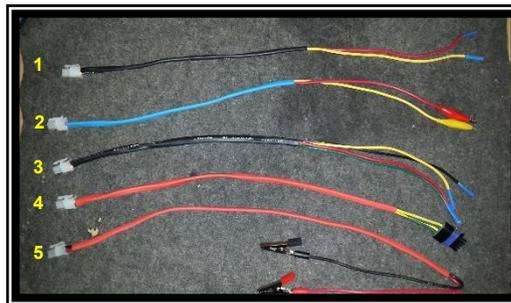


Figure N°1

Connector A	Connector B	Connector C
IAC Output Output A Output B Output C Output D	1) 12 VDC. 2) GND. 3) Low power output. 4) High power output.	Power Supply. 1) 12 VDC. 2) GND.

Table N°1

AutoMA 200 Harnesses:



- Harnesses No. 1 and No. 2, are used for testing ignition coils, Multiple Coils, 2 and 3-pin IAC, Injectors and throttle actuators.
- Harness No. 3, is used for testing coils with internal driver, ignition modules and 6-pin IAC.
- Harness No. 4, is used for testing Bosch and MM IAC.
- Harness No. 5, power supply.

Operation:

The equipment works with 12VDC and must be connected with harness No. 5 to the connector (C) and alligators to the battery or power supply, red alligator is positive and the black one is ground. Once connected the 6 leds of work mode will start to blink this indicates the tester is operating and ready to work. To select a work mode, you must press the selector button for ½ sec, to change the option and continue pressing until the desired work mode is selected, after this press the selector button for 1 sec, the led will remain lit steadily, this indicates the equipment is already working. To quit work only press the selector button for ½ sec.

Ignition Coils:

Connect the harness No.1 or No. 2 to test coils without internal driver or harness No. 3 if you are testing coils with internal driver to connector (B) Select the work mode "Bobinas, Inyectores, módulos" by pressing the selector button for ½ sec. Before starting the test there are two modes analysis and testing:

1. Analysis: To select this mode, press the selector button for 3 seconds in the "Bobinas, Inyectores, módulos" option. This mode allows to measure load and impedance of cold coil, then heated for 10 min at maximum capacity and impedance and load are measured again. Thus values between measurements are compared to diagnose the coil when it is loaded, if the coil is in good condition the measured values must be relatively equal. If the test passes the LED indicator will remain blinking at the current position if it fails, the LED indicator flashes on the overload (SC) position, indicating failure by overheating or short circuit in the ignition coil.

2. Testing: press for ½ sec the work mode, use the left knob to adjust the pulse width in ms which includes a range from 1 to 7 ms and right knob to adjust the RPM this includes a working range from 900 to 6000 rpm. Recommended values (Figure No. 2)

- ✓ Fuel Injection 1 to 2 ms
- ✓ Carburized 2 to 4 ms
- ✓ Contact breaker 4 to 7 ms



Figure N°2

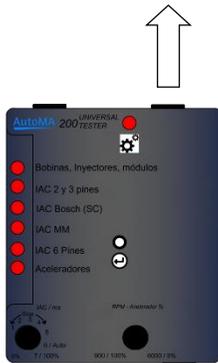


Figure N°3

In the multiple ignition coils should be used No.1 or No. 2 harnesses installed in the connector (B), place in the central pin in the red cable (common) and the Yellow cable in the next pins. For all tests you must place a spark plug wire to ground source or battery to avoid problems with testing.

To determine if it is a faulty coil, set as recommended values and check spark leakage, poor yellow spark or too much sizzle. It is recommended to test one group at a time, the maximum load of the AutoMA 200 is 5 continuous amps and 12 amps peak (Figure No. 3).

The AutoMA 200 can measure load current to determine overload fault (SC) or short circuit, if you notice that when testing the (SC) led is lit when running the test, indicates problems of overheating by increasing current and indicating failure of the coil

Internal Driver ignition coils and ignition Modules:

Do the same procedure as above performed to test individual coil and multiple coils, for this case use the harness No. 3. Connect the red wire to the positive coil with an internal driver, the black cable to the negative and the green wire to 2 remaining pins of the coil.

We recommend testing separately each group of coil since the equipment can be triggered by overload (SC). The AutoMA 200 is set to a predetermined value load protection (Figure No. 5 and No. 6)

Ignition coil connector

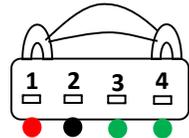


Figure N°5



Figure N°6

Same procedure for the ignition modules. (Figure N°7)

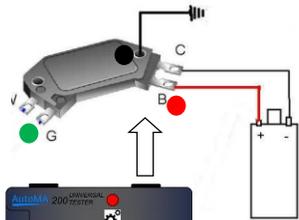


Figure N°7



Injectors:

You can test up to 4 injectors high and low impedance, using the harness No. 1 or 2 in (B). Press the work mode button ½ sec to select "Bobinas, Inyectores, módulos"; press the selector button for 1 sec and the LED indicator lights. With the left knob adjust the pulse width in ms with a range from 1 to 7 ms and with the right knob adjust the working RPM with a range from 900 to 6000 RPM. To exit this mode press work for ½ sec mode selector button. (Figure 4)



Figure N°4



2 and 3-pin IAC:

You must select the work mode "IAC 2 y 3 pines" connect in (B) harness No. 1 or 2 as appropriate and connect the red and yellow cables to the 2-wire IAC, then press the work mode selector button for 1 sec to start the test and adjust the control knob IAC to open and close the valve opening as the range shown on the label (Figure N° 8).

PRECAUTION: Do not let the wires come in contact with each other as a short circuit and cause equipment failure.

If you want test with IAC installed in the vehicle, turn the knob right and the engine should accelerate and turning the knob left the engine should deaccelerate and is likely to shut down. If the engine doesn't behave this way, uninstall the IAC and perform cleaning with carburetor cleaner. If you can see how the IAC opens and closes install the IAC and repeat the above test.

If the IAC test triggers the equipment SC (overload) check the connection, if good then the IAC is short circuited, low impedance or grounding and must be replaced. To test 3-pin IAC perform the same procedure used in the 2-pin IAC with a difference that the 3-pin IAC uses two internal coils, one to open and another to close so these two coils work together to control the engine idle, therefore it must use two control signals. The AutoMA 200 only generates one control signal, but you can test the following steps. (Figures No. 9 and 10)



Figure N°8



Figure N°9



3-pin IAC connector

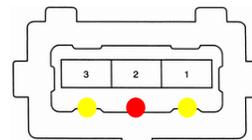


Figure N°10



3-pin IAC procedure:

1. Connect harness No. 1 or 2 in (B), the red wire to center pin then connect the yellow wire to pin 1 as shown in Figure N° 10.
2. Turn the knob right to accelerate the engine gradually, now turn left to deaccelerate to the minimum ~900 rpm.
3. Now change the yellow wire to pin 3 identified as in Figure 3, turn the control knob right to deaccelerate, now turn left and the engine must be accelerated to idle ~900 RPM. (Figure N° 10)

4-pin IAC BOSCH and MAGNETI MARELLI type:

Connect harness No. 4 in (A) and select the "IAC Bosch" work mode by pressing the selector button for ½ sec, then place the IAC control knob in the center at 12 o'clock. Press the selector button for 1 sec to start the test, turn the knob clockwise to close and causing the engine to deaccelerate, then turn the knob to the left to open and make the engine accelerate, to set the IAC take knob to the center, if the engine does not behave this way then uninstall the IAC and repeat the test outside the vehicle turn the knob to the right so the stem goes all the way out and service it with carburetor cleaner, lubricate with Vaseline and turn the knob to the left taking care to introduce the guide to not stuck and the IAC and damage it. Install and test in the vehicle again.

Turning the knob clockwise full scale to make the stem move automatically thus it can be introduced into an ultrasound tub and service it (Figure No. 11). To perform the test IAC valve MAGNETI MARELLI (MM) select the "IAC MM" work mode and repeat the above procedure. (Figure No. 11)

6-pin IAC:

For testing and servicing a 6-pin IAC you only select mode "IAC 6 Pines" but before you must identify all 6 pins of the IAC since there are two terminals that are common as shown in Figure N °12. The 6-pin IAC consists of two independent coils with a common among themselves. To identify these coils just measure with a multimeter, for example, if the measurement between two points A and C is 50 ohms and the measurement between point A and the center or other point gives you 25 ohms that's the common of the coil, then perform the same procedure for the other coil. Having identified common points now each end of the coil is named as shown in Figure N°12. A and C is a coil, B and D the other coil, now connect the harness N°3 in (A) the color terminals must be connected to the terminals of the IAC according to table N ° 2 press the selector button to start the test and follow the same procedure as done with 4-pin IAC.

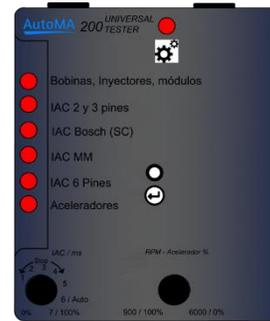


Figure N°11

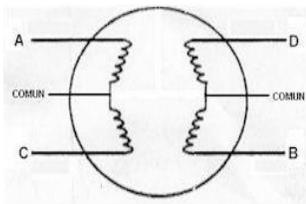


Figure N°12

HARNESS N°3	6-PIN IAC
Black Cable	Pin A
Green Cable	Pin B
Yellow Cable	Pin C
Red Cable	Pin D

Table N°2

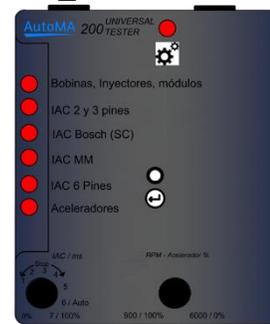


Figure N°13

Electronic Throttle:

Press the selector button for ½ sec to reach the "Aceleradores" work mode, connect the electronic throttle using harnesses No. 1 or 2. Turn the adjustment knob right acceleration to 0% and then press the selector button for 1 sec to begin testing. Turn the knob left to start moving the throttle, If the flap rotates in the opposite direction, reverse the cables and repeat the test. If the test triggers the SC (overload) mode, check the connection, if the problem persists the coil in the electronic throttle is short circuited, low impedance to ground or there stumbles into its internal mechanism, replace the electronic throttle or service it. (Figure N° 14)



To identify the connection pins on the throttle body, measure the impedance with an ohmmeter between pins on the same connector, and get a reading from 1.5 to 5 ohm indicating the pins where the harness must be connected.

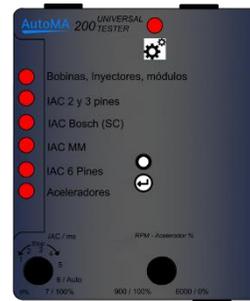


Figure N°14

NOTE: The AutoMA 200 has a slot for easy access to the Mini-Fuse 5 Amp. It is recommended not using a higher capacity fuse as damage might result.

AutoMA 200

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