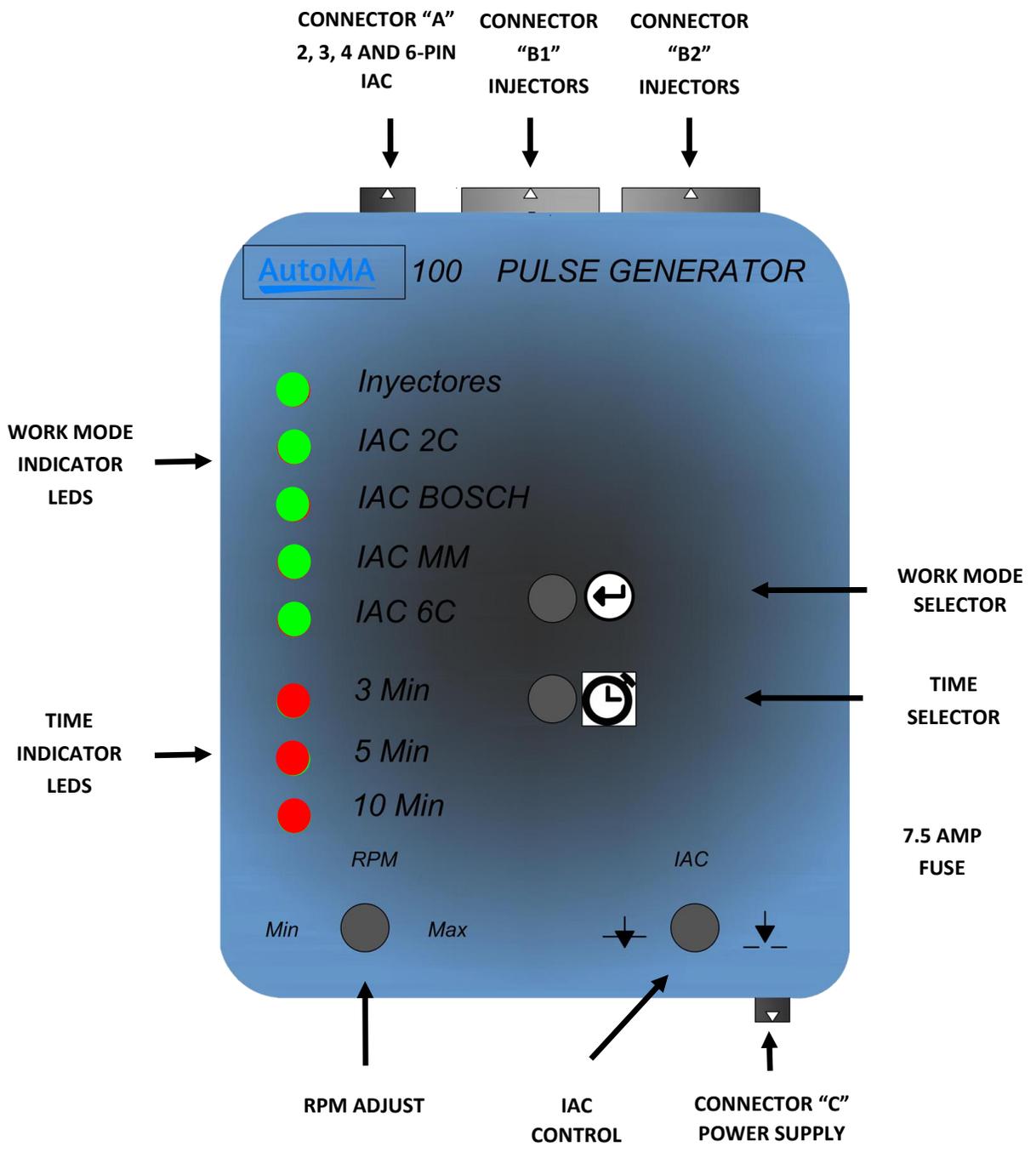


AutoMA 100



RECOMENDATIOS AND PRECAUTIONS

- The power supply for the equipment must be 12-14 VDC and 10 amps, if a higher power supply is used the equipment may get damaged.
- Avoid any short circuit between harnesses connected in connectors "A" and "B".
- Ensure that any component being tested is free of grease, oil, gasoline or any other material.
- Be careful not to short circuit any of the wires during tests.
- Do not use any fuse higher than 7.5 Amps, it could damage the equipment

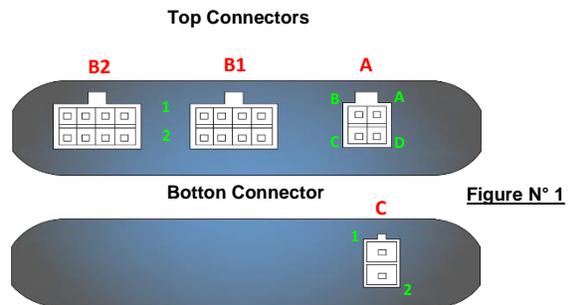
Function: The AutoMA 100 allows you to service several components such as injectors, IAC valves (2, 3, 4 and 6-pin), Bosch IAC and Magneti Marelli (MM) IAC in an easy way by simulating specific control signals for cleaning and servicing benches.

Features: Generation of control and power signals to control Injectors and IAC Valves.

- 7.5 A fuse protected.
- Easy to use control panel.
- Indicators to select work modes and control and power signals.
- Service duration time indicator.
- 450 to 5000 RPM ($\pm 4\%$) setting, 4 milliseconds ($ms \pm 5\%$) fixed pulse width.
- Opening and closing IAC valves control signals.
- Supports up to 7 Amps of continuous load and 12 Amps picks
- Universal connectors to perform fast and efficient testing.

Content:

- 1 AutoMA 100 pulse generator.
- 5 Harnesses.
- 1 User's Manual.



| Connector A | Connectors B | Connector C |
|-------------|------------------|-------------|
| IAC Output | 1) 12 VDC. | DC Supply. |
| Output A | 2) Power Output. | 1)12 V. |
| Output B | | 2)GND. |
| Output C | | |
| Output D | | |

Table N°1

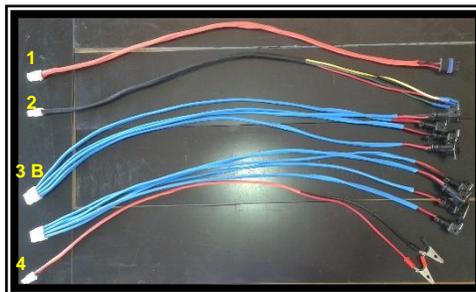


Figure N° 2

- Harness N° 1, is used to service Bosch IAC and Magneti Marelli (MM) IAC.
- Harness N° 2, is used to service 2, 3, and 6-pin IAC valves.
- Harness N° 3B, is used to perform the service to injectors, with both you can clean up to 8 injectors at the same time.
- Harness N° 4, 2-pin connector to power supply.

Equipment Operation:

The AutoMA 100 works with 12VDC and it has two buttons, the first is for the work mode and the second is to select test time. The harness N ° 4 must be connected to the connector (C) and alligator clips to the battery or 12VDC power supply, Red is positive and black is ground, after connecting them the work mode and time leds will light up, that shows the tester is ready to work. To change the work mode or time you have to pulse the buttons until you get to the desired one, then press the mode button until the led blinks, this indicates the device is operating. While the test is running you cannot change the time or work mode, if you wish to change any of them press the work mode button until the led blinks to abort the test and change any of the modes.

Injectors Service:

You can service up to 8 injectors of high and low impedance, using the harness No. 3B in the connector (B). Press the selector button mode for ½ second to select the injectors mode (shown "inyectores"), similarly select the time mode; as selected work and time function press the work mode button for 1 sec to start, the left knob allows you to adjust the RPM, which vary in a range from 450 to 5000 RPM. To abort the test before time, press the work mode button for 1 sec until the led blinks. (Figure N ° 3)

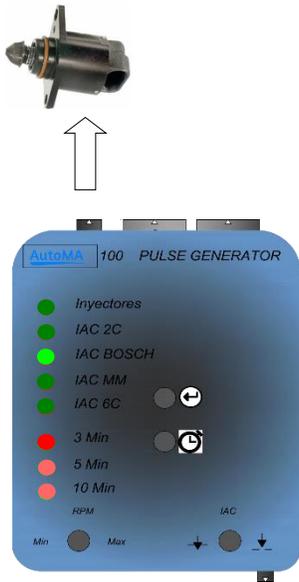


Figura N°4

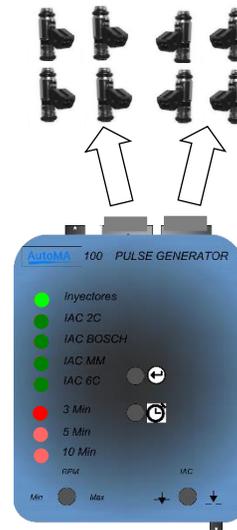
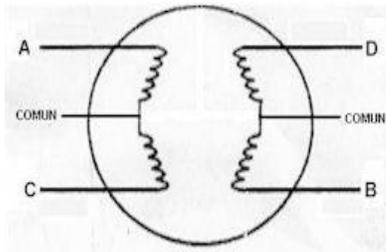


Figure N°3

Maintenance of IAC 4-pin valve type BOSCH and MAGNETI MARELLI:

Connect the harness N °1 to the connector (A) of the AutoMA 100 and the other end to the IAC, now put the knob control of IAC to the center at 12 o'clock and select "IAC MM" or "IAC Bosch" mode, press the input button for 1 sec to start the test, if you turn the knob slowly to the right and the stem must go out, if you turn the knob slowly to the left stem must come in. Turning the knob completely to the left or right side the stem must go in and out automatically, this mode is used to introduce the IAC in ultrasound tub and service. To stop the IAC, bring the knob to the Center. (Figure N ° 4).

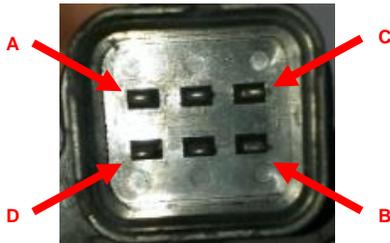
If you want to identify an IAC MM or IAC Bosch, connect to your device and select one of the work modes 4-pin IAC, if the valve works properly it corresponds to the type you have selected. (Figure N ° 4)



6-pin IAC valve:

For testing and servicing a 6-pin IAC you only select mode "IAC 6C" but before you must identify all 6 pins of the IAC since there are two terminals that are common as shown in Figure N °5. 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°5. A and C is a coil, B and D the other coil, now connect the harness N°2 in the connector (A) the color terminals must be connected to the terminals of the IAC according to table N ° 2. Turn the knob slowly to the right so that the stem goes out, turn the knob to the left to get it

Figure N°5



in. Turning the knob completely to the left or right side the stem must get in and out automatically, this mode is used to introduce the IAC in ultrasound tub and service.

| Harness N°2 | 6-pin IAC |
|-----------------|-----------|
| Red terminal | Pin A |
| Black terminal | Pin B |
| Yellow terminal | Pin C |
| Green terminal | Pin D |

Table N°2



Figure N°6

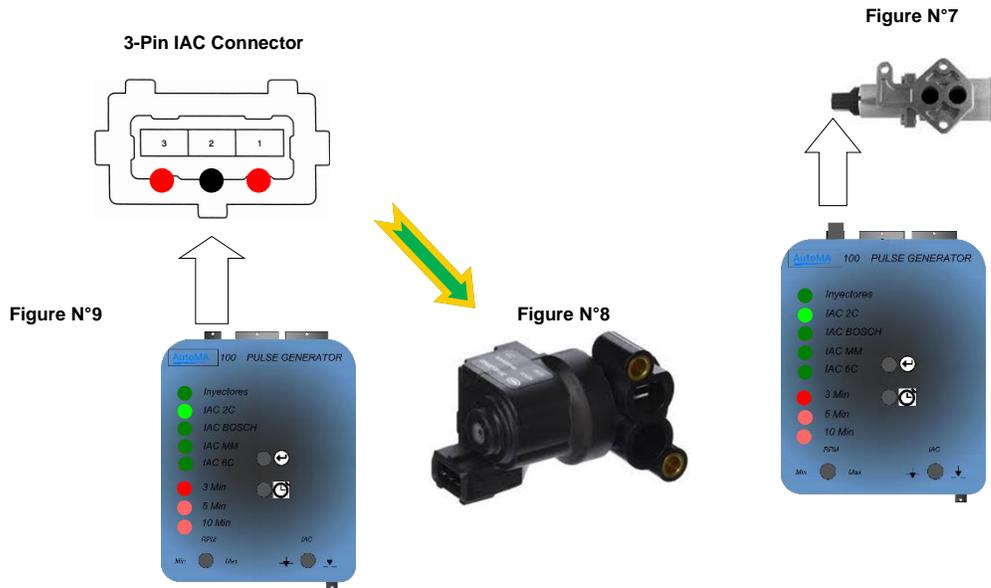


2 and 3-pin IAC valve service:

Select work mode "IAC 2C" by pressing the selector work mode button, connect the harness N ° 2 in (A) and connect the red and black cable terminal to the terminals of the IAC valve 2-pin, then press the mode selector button for approximately 1 sec and begin the service automatically (Figure N ° 7).

To test or servicing 3-pin IAC valve you have to perform the same procedure as that used in the IAC valve 2-pin with the difference that this one uses 2 internal coils, one to accelerate and another to slow down in such a way that these two coils work together to control the idle of the engine. In this regard two control signals should be used to perform its function, the AutoMA 100 generates one control signal, but the test following the procedure described below can be done (Figure N ° 8 and 9)

CAUTION: Do not let wires contact each other and cause a short circuit that could damage to the equipment.



3-pin IAC service procedure:

1. Connect the harness No. 2 to (A), then black cable terminal to pin 2 of the IAC, then connect the terminal of the red wire to pin 1 as shown in Figure 9.
2. Place in the ultrasound tub and activate the AutoMA 100 which performed the test automatically with staggered range upward from 0 to 100%.
3. After some time change the Red cable terminal to pin 3, continue doing the above mentioned step to continue the service.

Caution: This test should only be done in tub or ultrasound test bench, if it's done within the vehicle acceleration will be very sharp.

Injektors, BOSCH IAC, MAGNETI MARELLI(MM) IAC and 6-pin IAC service:

The AutoMA100 allows you to perform service or maintenance up to 8 injectors high and low impedance, and at the same time bosch, MM and 6-pin IAC valves. Using harnesses No. 3B in (B) for injectors and harness No.1 for IAC Bosch and MM, for 6-pin IAC you have to use harness No. 2 installed in (A), only choose the mode you want to work with and select the time. Press the work mode button the same manner as mentioned before. (Figures 10 and 11)

Injektors and IAC Bosch

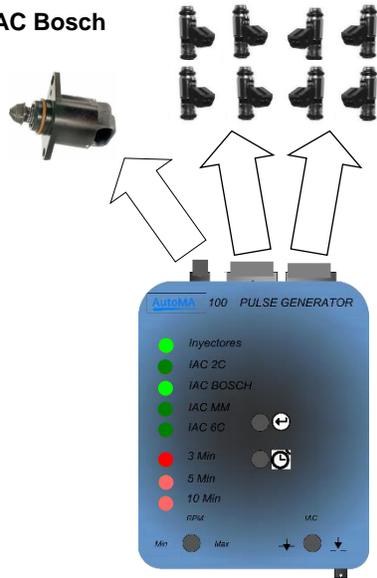


Figure N' 10

Injektors and 6-pin IAC

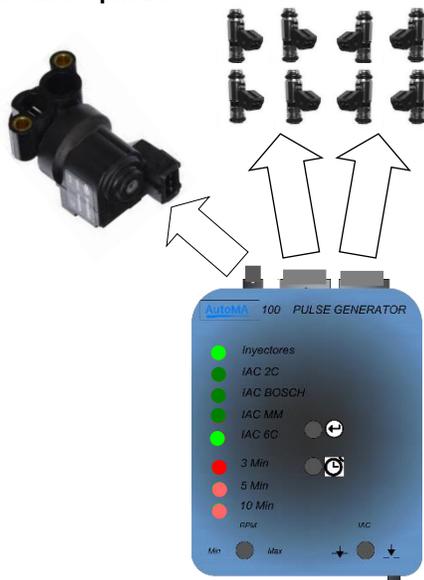


Figure N' 11

NOTE: The AutoMA 100 It contains a slot for easy access to the Mini-fuse 7.5 Amp. It is recommended not installing a higher capacity fuse as this may damage the equipment.

AutoMA 100

Proudly made in Venezuela