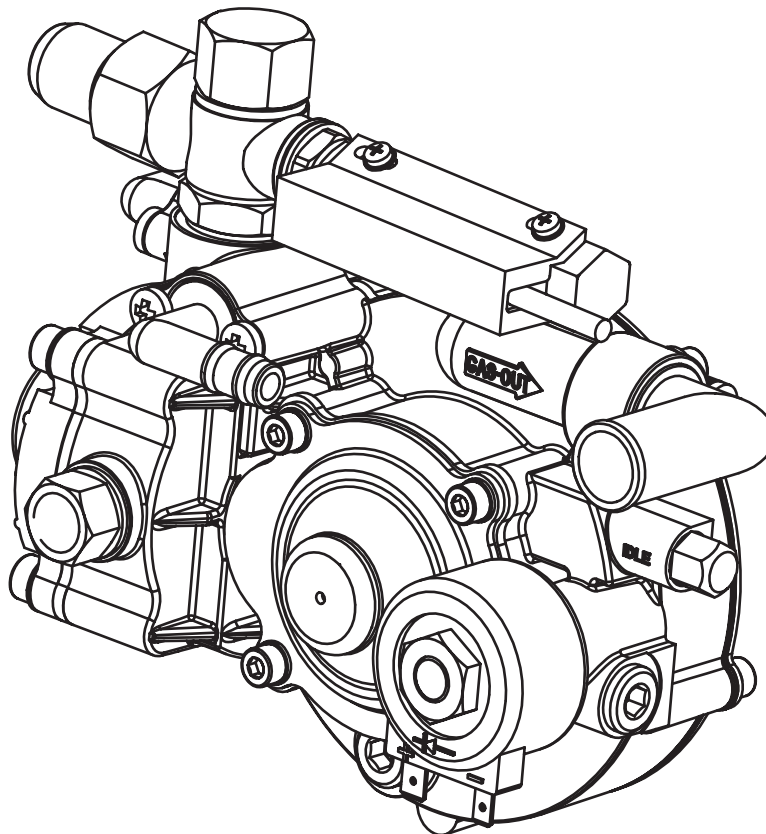


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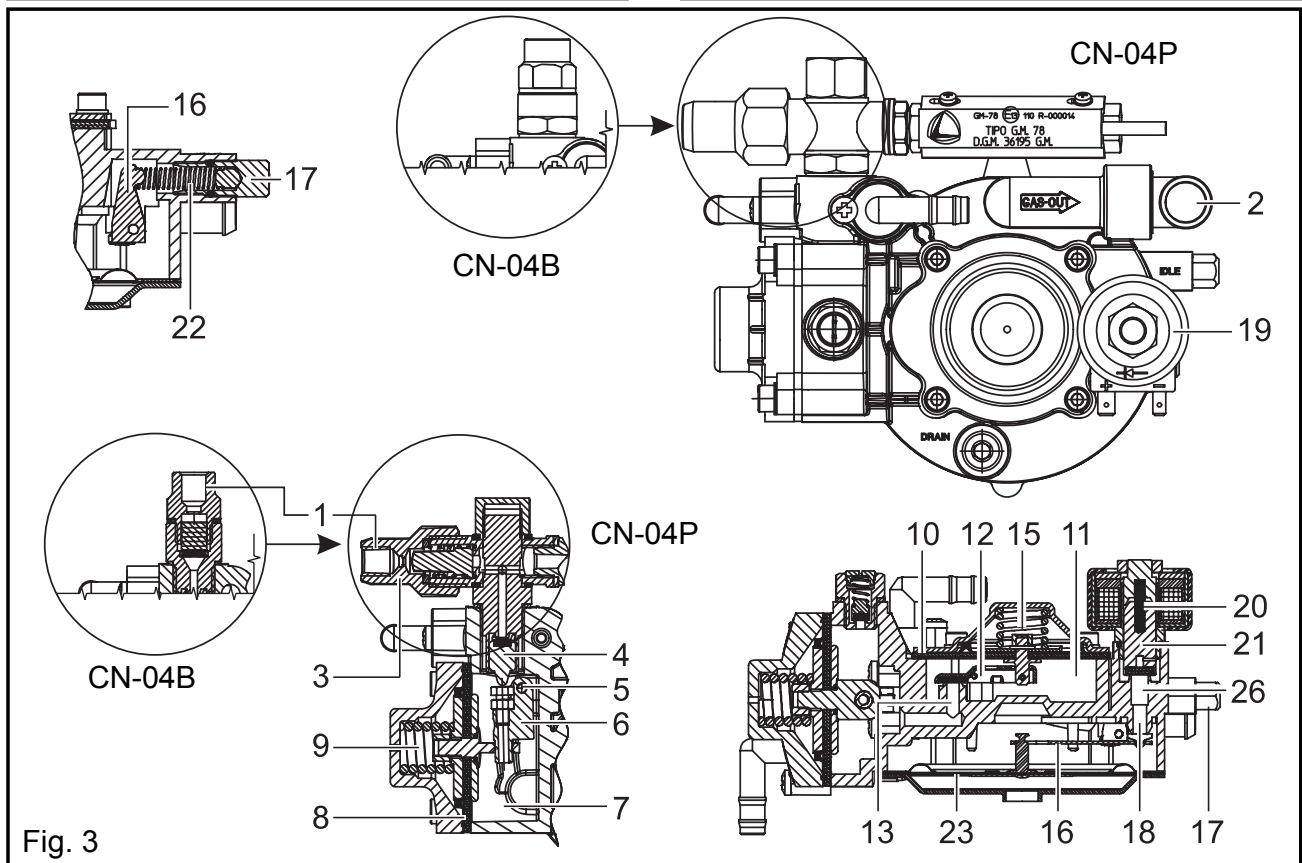
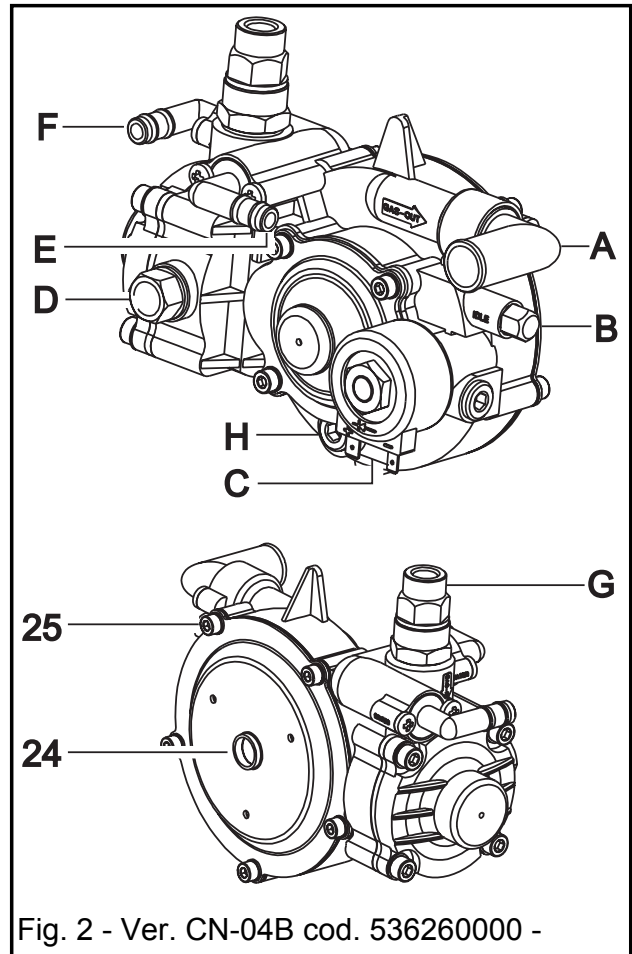
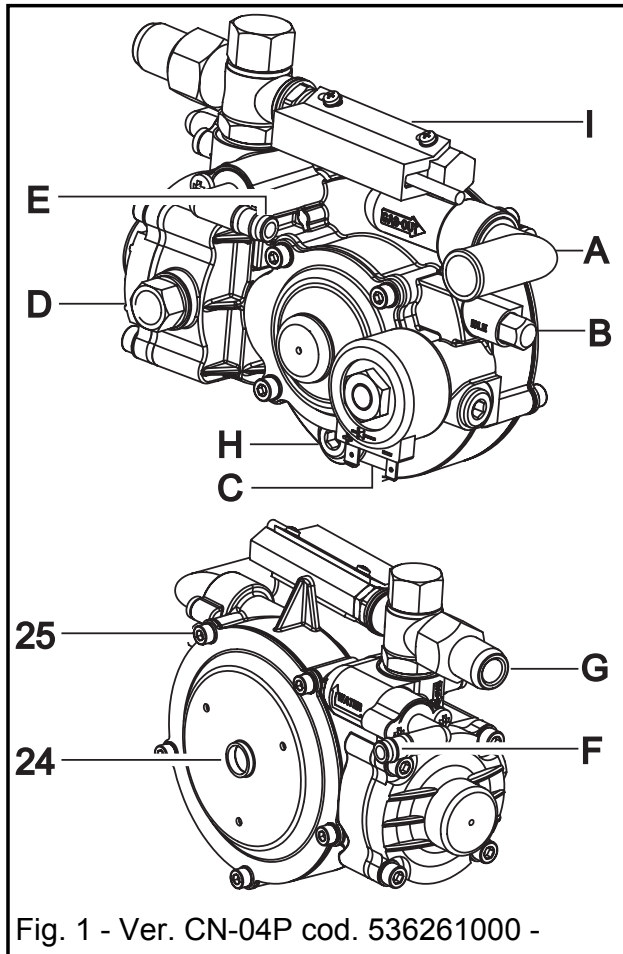
**RIDUTTORI 'CN04' METANO**  
**'CN04' CNG PRESSURE REGULATORS**  
**DETENDEURS 'CN04' GAZ NATUREL**  
**REDUCTORES 'CN04' GAS NATURAL**



**LANDIRENZO®**

I Schemi Tecnici  
 GB Technical Drawings

F Schémas Techniques  
 E Esquema Técnicos



**LANDI RENZO S.p.A.**

RID. METANO CN04 / CN04 CNG REG. / RED. CN04 GAZ NATUREL / RED. CN04 GAS NATURAL  
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Thank you for purchasing this **LANDI RENZO** version 'CN04' pressure regulator, a reliable and technologically advanced device for the conversion of vehicles with catalytic converter and engine with fuel injection system or carburettor to methane. Correctly installed it will give its user many years of excellent service To ensure that you obtain the maximum performance from your conversion system, please read these installation and adjustment instructions carefully.

## LEGEND (FIG. 1-2)

- A) Gas outlet
- B) Throttle adjustment screw.
- C) Solenoid valve positive and negative contact.
- D) Safety valve.
- E) Water outlet connector to attach to an engine water circuit outlet pipe.
- F) Water inlet connector to attach to a return pipe of the engine water circuit.
- G) Gas Inlet.
- H) Bleed tap.
- I) Pressure sensor.

## 1. TECHNICAL SPECIFICATION

Electronically controlled device that reduces the methane pressure, permitting a regular flow of gas for all engine demands. It is equipped with three pressure reduction stages, providing stability at both high and low supply pressures, as the amount of gas supplied changes, and a low pressure solenoid valve upstream of the third stage. Heat absorbed from the pressure regulator elements heated with the engine cooling circuit fluid ensures that the pressure regulator does not freeze during the pressure drop phase. The flow of gas needed for the engine to idle is activated by a dedicated solenoid valve, and supplied through the main flow gas pipe. Equipped with an electronic starting device incorporating a safety system that intervenes to close the gas solenoid valve when the engine is turned off, including accidentally.

### CHARACTERISTICS:

Methan pressure pressure regulator with 3 reduction stages.

#### *Application:*

automotive traction, suitable for vehicles with catalytic converterr and engine with fuel injection system or carburettor.

#### *Fuel type:*

CNG (Compressed methan gas).

#### *Heating:*

by engine cooling fluid.

#### *Operating temperature:*

from -40° TO 120°C.

#### *Supply voltage:*

12 volts nominal;  
operating field from 8 to 16 volts.

#### *Test pressure:*

390 bar

#### *Inlet pressure:*

Minimum 15 bar

Maximum 260 bar

#### *Bursting pressure:*

> 400 bar

#### *1st stage adjustment pressure:*

4 bar

#### *2nd stage adjustment pressure:*

1.5 bar

#### *Safety valve opening pressure:*

6.5 bar

#### *Max loss:*

< 15 Ncm<sup>3</sup>/h (alr)

#### *Indicative service life:*

about 100,000 Km

#### *Maximum METHANE flowrate:*

18.1 Kg/h

#### *Vehicle maximum power:*

up to 100 Kw

#### *Weight:*

about 1.6 Kg.

Type approval E13110R 000101

## 2. FUNCTIONING OF THE PRESSURE

### REGULATOR (FIG. 1-2-3)

The methane passes through the pressure regulator inlet (1), passes through the pipe (3) and the first stage valve(4), and enters the first stage chamber(3). The pressure exerted by the gas on the walls of the chamber dilates the first stage membrane (8), overcoming the resistance of the calibrated spring (9). Since the membrane (8) is attached to the lever (6) with fulcrum at (5), it acts on the first stage valve (4), opening and closing it to create a pressure balance. From the first stage chamber (7), the gas passes into the second stage chamber (11), and its flow rate is regulated by the pressure exerted by the gas on the membrane (10), which dilates and overcomes the resistance of the spring (15) to operate the lever (12) which adjusts the opening and closing of the first stage valve (13). Depressurising the engine causes an axial movement of the third stage membrane (23), which is connected to the lever (16) and thus opens the valve (18) allowing the gas to reach the 3<sup>rd</sup> stage chamber and then, across the spool (2) through the pipe to the engine.

The minimum of the throttle valve (18) is regulated using the throttle adjusting screw (17), which acts on the spring (22) and thus on the lever (16) to ensure passage of the right amount of gas to operate at idle. The start and acceleration device consists of a solenoid valve (19) controlled by an electronic device that only powers the valve when the engine is started, allowing the gas to exit through the valve housing (26) and then proceed to the 3<sup>rd</sup> stage chamber. If the engine does not start the coil de-energises, and the core(21) and spring (20) resume their pressure on the housing (26), thus cutting off the gas flow; this also applies if the engine should stall for any reason. Before starting, when the current is switched on, the electronic device excites the coil (19) for a pre-set period of time, freeing the amount of gas needed for starting from the housing (26).

### 3. GENERAL WARNINGS

The following instructions should be followed when installing the pressure regulator:

- install the pressure regulator in the engine compartment as close as possible to the point where the mixer will be installed, attaching it firmly to the bodywork with the screw on the centre hole (24) supplied with the unit;
  - install the pressure regulator outside the space housing the organs that take in air to ventilate and heat the interior compartment;
- install the pressure regulator at least 150 mm from the exhaust manifolds and silencers. If the distance is less than the minimum value prescribed, but greater than 75 mm, a diaphragm in sheet metal or material of equivalent characteristics, with a minimum thickness of 1 mm, must be interposed between the elements.
- position the pressure regulator parallel to the direction of movement and in a vertical position, so that it is easily accessible for adjustment and maintenance operations;
  - check that the pressure regulator is fitted in a position that is lower than the highest point of the radiator to avoid the formation of air bubbles in the water circuit;
  - make sure you do not position the pressure regulator in such a way that the bleed screw is over the distributor or the ignition coil;
  - carefully clean the high pressure methane pipes before connecting them permanently to the pressure regulator, to avoid getting any impurities inside the pressure regulator;

- check that there are no leaks from the water pipes (generally connected to the interior compartment heating circuit) when the engine is on;

- check that the pressure regulator heats up quickly through its connection to the engine cooling circuit.

Each time the engine cooling circuit is emptied the liquid level must be topped up, ensuring that any air bubbles that could prevent pressure regulator heating are eliminated.

The pressure regulator gas outlet must be connected to the mixer, ensuring that the connecting pipe (which must be as short as possible) has no curves or bags.

**Do not in any circumstances slacken the five screws (25) that attach the 3<sup>rd</sup> stage cover to the pressure regulator body in order to attach the pressure regulator. Use only the central hole (24) and the corresponding screw with nut and washer.**

### 4. 'ADJUSTMENT OF 'EC04' PRESSURE REGULATORS

*with exhaust gas analyser*

#### **4.1 Fuel injection vehicles with catalytic converter (V05 system)**

The first operation is to adjust the maximum:

- bring the engine to about 3,500 rpm to learn the default value.

The second operation is to regulate the minimum:

- with the engine on, turn the throttle adjustment screw (B) (clockwise to decrease and anticlockwise to increase) until the number of steps of the linear electromechanical actuator shown on the "Display" menu under MOT on the Mod. V05 Tester Programmer is equal (or as close as possible) to the value indicated at DEF.
- Check that the LEDs of the Lambda scale that indicate carburation are oscillating regularly.
- use the exhaust gas analyzer to check that the Lambda value is about 1,000, the CO and HC are close to zero and the CO<sub>2</sub> value is around 11-13%. Refer to the "Lambda Control System A1 V05 installation and adjustment manual" or the carburation measurement procedure in the "Mod. V05 Tester Programmer instruction manual" for further details.

After registering the minimum and the maximum, perform a road test.



**4.2 VEHICLE WITH CARBURETTOR OR FUEL INJECTION ENGINE**

The first operation is to adjust the maximum:

- bring the engine to about 3,500 rpm and turn the throttle adjustment screw on the pipe connecting the pressure regulator and the mixer, until the values of CO, CO<sub>2</sub> and HC are about as shown in the table;

The second operation is to regulate the minimum:

- with the engine on, turn the throttle adjustment screw (B) (clockwise to decrease and anticlockwise to increase) until the CO, CO<sub>2</sub> and HC values are approximately those shown in the table;

After registering the minimum and the maximum, perform a road test.

SETTING TABLE REGULATORS CN04			
GAS	SPEED	LIMITS	
		Bottom	Top
CO (in %)	Idling	0.10	0.30
	3.500 g/m	0.10	0.30
CO <sub>2</sub> (in %)	Idling	11	13
	3.500 g/m	11	13
HC (in ppm)	Idling	150	250
	3.500 g/m	30	60

**5. 'ADJUSTMENT OF 'EC04' PRESSURE REGULATORS**

*without exhaust gas analyser*

**5.1 VEHICLES WITH FUEL INJECTION SYSTEMS AND CATALYTIC CONVERTERS**

See paragraph 4.1, omitting the test with the exhaust gas analyser.

**5.2 VEHICLES WITH FUEL INJECTION SYSTEMS AND CARBURETTORS**

The first operation is to adjust the maximum:

- bring the engine to about 3,500 rpm and turn the throttle adjustment screw on the pipe connecting the pressure regulator and the mixer clockwise until the engine noise changes because of the lean mixture, then turn the screw very slowly in an anticlockwise direction until the engine revs increase; in this phase the screw does not need to be turned anticlockwise again since this would only increase consumption without increasing yield.

The second operation is to regulate the minimum:

- with the engine on, turn the throttle adjustment screw (B) (clockwise to decrease and anticlockwise to increase) until a stable minimum is achieved, and check again after the road test.

After registering the minimum and the maximum, perform a road test.

**6. SYSTEM MAINTENANCE OPERATIONS**

To obtain the best from methane fuel, the engine must be tuned and regularly maintained, in both its mechanical and its electrical parts. In addition to the normal maintenance prescribed by the vehicle manufacturer, you should also:

- every 15,000 km, check/replace the air filter, replace the spark plugs, check the exhaust gas, check the efficiency of the electrical system (check that connections have not rusted);
- every 30,000 km, check the play in the valves, the efficiency of the Lambda probe (for vehicles with catalytic converters) and use the bleed tap to check that there is no oil or other residues inside the pressure regulator.

- every 100,000 km, if malfunctioning has developed, perform a general overhaul of the conversion system, using our product overhaul kits, which come complete the suitable instructions that describe the procedures to follow. Spark plugs with a colder thermal grade should be used, checking that the electrode spacing is never greater than 1 mm. The valve clearances should be increased to 0.05 mm greater than the specifications for petrol operations supplied by the vehicle manufacturer. Once a methane conversion system has been installed, it is natural to use this for as many kilometres as possible: however, to avoid prejudicing the correct operation of the original petrol fuelled system, and of the fuel pump, it is advisable to drive 2/3 km on petrol every 200/300 km at least (at each refuelling with methane, for example).

*Data, descriptions and illustrations are purely indicative, and LANDI RENZO S.p.A. reserves the right to make improvements or changes to them as it sees fit, and without notice.*

*Do not tamper with the original Landi Renzo components for any reason, particularly not with the engine running or with the ignition on.*

*Washing the engine with direct jets of water, and installations in unsuitable points of the engine compartment can cause water infiltration into the components and in consequence to subsequent damage.*

**LANDI RENZO S.p.A. declines any responsibility for damages to persons or things deriving from tampering with its device by unauthorised personnel.**