



**MAINTENANCE PROCEDURES
OF REGULATOR MODEL
RP/M-E97**

03/11/2004

Tartarini Auto S.p.a

Via Bonazzi 43 40013 Castel Maggiore (Bo) Italy

Tel.: +39 051 632 24 11 Fax: 051 632 24 00

E-mail: info@tartariniauto.it www.tartariniauto.it

The regulator is to be serviced every 40.000 km, (if necessary).
The regulator **MUST** be taken off the vehicle to carry out the jobs described hereafter.

For any information on the procedures described hereafter, please contact 051 6322429 or mail us at info@tartariniauto.it

Start servicing the first and second stage



Remove the screws that secure the cover.



ATTENTION:

While unscrewing the six screws, press the cover down to prevent it from springing off.

fig.1



Take the cover off.

fig.2



Remove the springs.

fig 3



Unscrew the nut, remove the spring and relative metal plate of the first stage.

fig.4



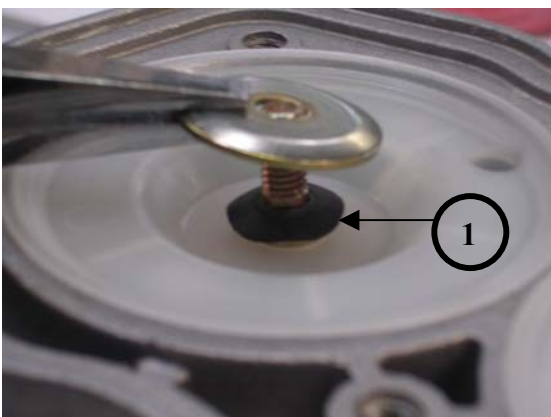
Unscrew the nut, remove the plate of the second stage.

fig.5



Remove the diaphragm.

fig.6



Remove the bottom plate and the gasket n° 1.

fig.7



Remove both plastic plates.

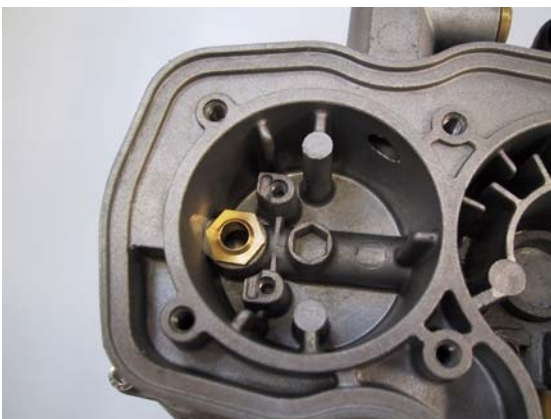
fig.8

Servicing the second stage



Unscrew the screws that secure the lever that carries the pad of the second stage.

fig.9



Make sure the seat is not damaged.
Clean the empty space from dirt.

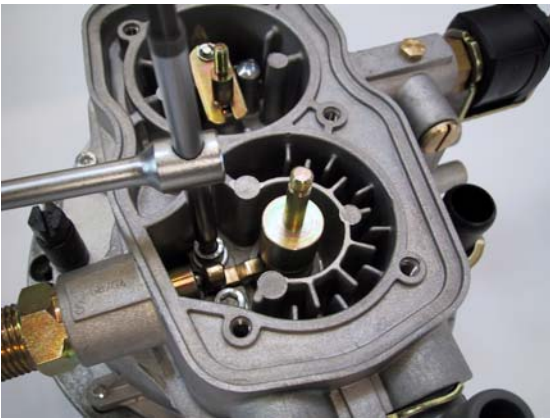
fig.10



Replace the rubber pad with a new one.
Put the lever unit that carries the pad back together and screw it onto the chamber of the second stage using the two screws.

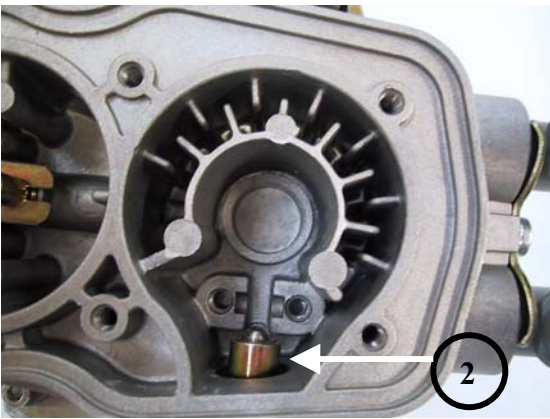
fig.11

Servicing the first stage



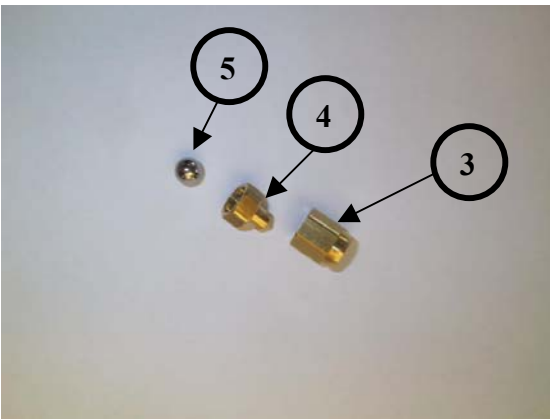
Unscrew the screws that secure the lever and the high pressure fork of the first stage.

fig.12



Extract the three sealing elements of the first stage n° 2.
Clean the empty space from dirt.

fig.13



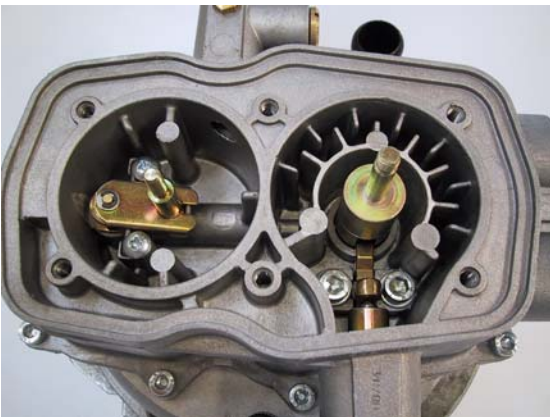
Replace just valve unit n° 3.

Put the components in their seats in the same order.

- 1) Valve unit n° 3
- 2) Valve guide n° 4
- 3) Ball n° 5

Put the lever and high pressure fork back together and screw it onto the chamber of the first stage using the two screws. Tightening torque: 6 ± 0.4 Nm.

fig.14



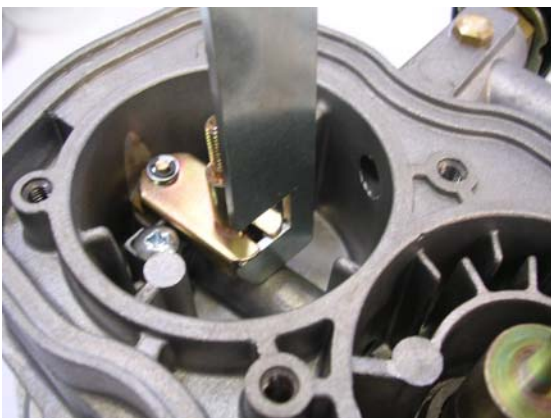
Before you re-assemble the regulator, you need to check the strokes of the valves.

fig.15



Check the stroke of the first stage.
Put the gauge between the ball
and the lever to check the
distance, which should be: 0.45
mm.

fig.16



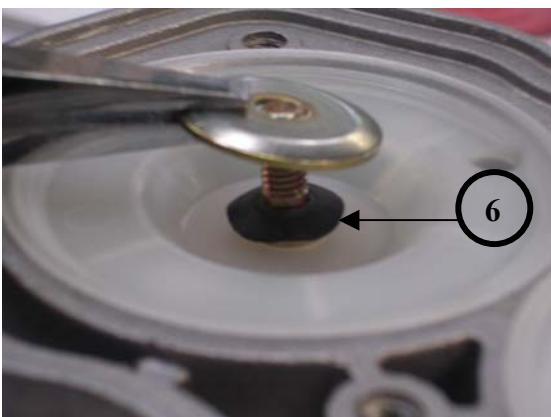
Check the stroke of the second
stage.
Check the distance between the
pad carrying unit and the casing
using the dedicated gauge, which
should be 11.2 mm.

fig.17



Install the plastic plates.

fig.18



Install the new gasket n° 6 first,
then the bottom plate.

fig.19



Put the new diaphragm in its seat.

fig.20



Install:

- 1) The plate with outer edge facing upwards
- 2) The spring
- 3) Tighten the nut of the first stage. Tightening torque $3\pm 0,2$ Nm.

fig.21



Install:

- 1) The plate with the outer edge facing upwards
- 2) Tighten the nut of the second stage. Tightening torque: $2\pm 0,2$ Nm.

fig.22

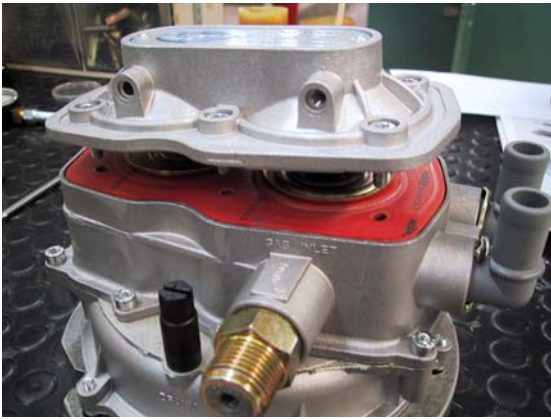


Install the springs in their seat.

Attention: the thinner spring is conical and is therefore put on the second stage with the narrower part of the coil facing the plate.

The thicker spring is cylindrical and is simply put on the plate of the first stage.

fig.23



Position the cover on the springs, making sure they fit into their seats correctly and press down lightly to screw the screws in place.

fig.24



Tighten the six screws, in cross sequence.
Tightening torque: $6 \pm 0,4$ Nm.

fig.25

End of first and second stage maintenance procedure.

Replace the gas filter



There are two types of filters. The filter illustrated here is the most up-to-date version of the filter with metal thread. Extract the gas filter from the opposite seat, clean inside the little column to remove any dirt, replace the filter with a new one.

fig.26



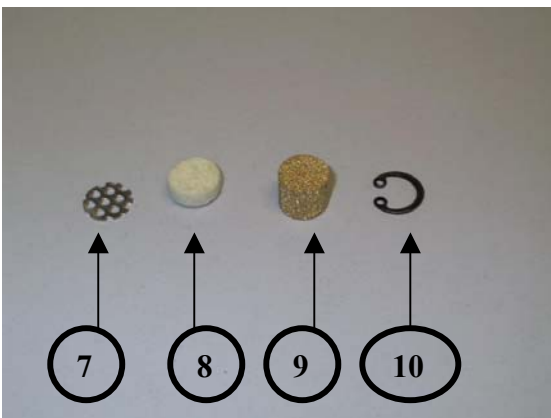
The filter illustrated here is the first version with sintered bronze filter.

fig.27



Extract the snap ring that holds the filters in place and remove the sintered bronze filter first, then the felt filter, and finally the metal mesh, clean inside the little column, replace both filters with new ones.

fig.28



Insert the components in the dedicated seat, in the following order:

- 1) The metal mesh n° 7
- 2) The felt filter n° 8
- 3) The sintered bronze filter n° 9
- 4) The snap ring n° 10

fig.29

End of gas filter replacement procedure

Start servicing the heating water circuit



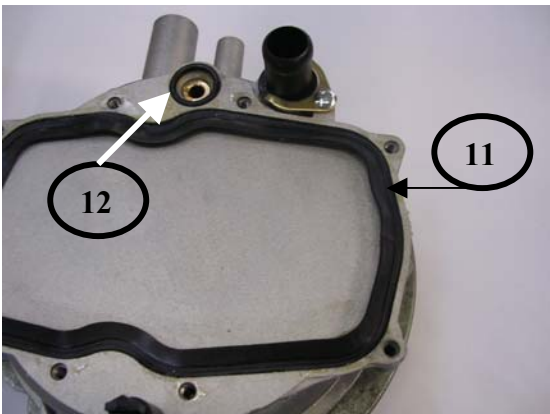
Unscrew the eight screws

fig.30



Open the two casings of the regulator.

fig.31



Replace the gasket of the water circuit n° 11 and grease the sealing zone.
Replace the O-ring n° 12.
Clean the seats from dirt.

fig.32



Put the two casings of the regulator back together and tighten the screws in cross sequence. Tightening torque: $4 \pm 0,3$ Nm.

fig.33



Unscrew the screws that secure the two water fittings.

fig.34



Replace both O-rings n° 13. Install the two water fittings with dedicated securing screw.

fig.35

End of heating water circuit maintenance procedure

Start to service the low pressure unit



Unscrew the six screws that secure the low pressure cover in place.

fig.36



Remove the low pressure diaphragm

fig.37



Unscrew the screws that secure the low pressure lever unit in place.

fig.38



Take the sealing pad out of its seat.

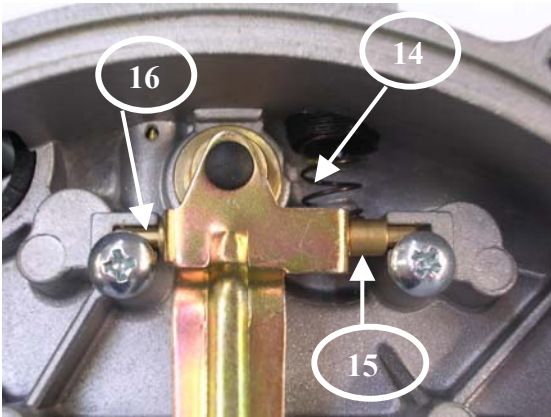
fig.39



Replace just the rubber pad and insert the new one back in its seat.

Attention: on the metal bush just on one side, in the middle, you will see a conical flare, which indicates the side in which the new rubber pad is to be inserted.

fig.40



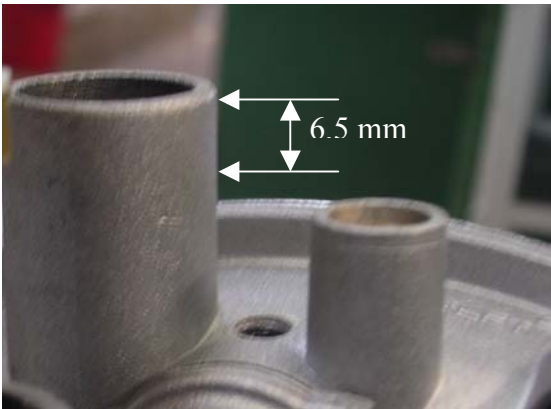
Install the low pressure lever unit, checking the correct position of the:

- 1) Minimum adjustment screw n° 14
- 2) Larger spacer n° 15
- 3) Smaller spacer n° 16.

Tightening torque: $2 \pm 0,2$ Nm.

SERVO VENTURE COMPONENTS FOR REGULABLE SYSTEM												
Version	Code	QTY	Part	Material	Notes	Notes	Notes	Notes	Notes	Notes	Notes	Notes
100	100-001	1	MINI-REGULATOR	ALUMINUM								
100	100-002	1	MINI-REGULATOR	ALUMINUM								
100	100-003	1	MINI-REGULATOR	ALUMINUM								
100	100-004	1	MINI-REGULATOR	ALUMINUM								
100	100-005	1	MINI-REGULATOR	ALUMINUM								
100	100-006	1	MINI-REGULATOR	ALUMINUM								
100	100-007	1	MINI-REGULATOR	ALUMINUM								
100	100-008	1	MINI-REGULATOR	ALUMINUM								
100	100-009	1	MINI-REGULATOR	ALUMINUM								
100	100-010	1	MINI-REGULATOR	ALUMINUM								
100	100-011	1	MINI-REGULATOR	ALUMINUM								
100	100-012	1	MINI-REGULATOR	ALUMINUM								
100	100-013	1	MINI-REGULATOR	ALUMINUM								
100	100-014	1	MINI-REGULATOR	ALUMINUM								
100	100-015	1	MINI-REGULATOR	ALUMINUM								
100	100-016	1	MINI-REGULATOR	ALUMINUM								
100	100-017	1	MINI-REGULATOR	ALUMINUM								
100	100-018	1	MINI-REGULATOR	ALUMINUM								
100	100-019	1	MINI-REGULATOR	ALUMINUM								
100	100-020	1	MINI-REGULATOR	ALUMINUM								
100	100-021	1	MINI-REGULATOR	ALUMINUM								
100	100-022	1	MINI-REGULATOR	ALUMINUM								
100	100-023	1	MINI-REGULATOR	ALUMINUM								
100	100-024	1	MINI-REGULATOR	ALUMINUM								
100	100-025	1	MINI-REGULATOR	ALUMINUM								
100	100-026	1	MINI-REGULATOR	ALUMINUM								
100	100-027	1	MINI-REGULATOR	ALUMINUM								
100	100-028	1	MINI-REGULATOR	ALUMINUM								
100	100-029	1	MINI-REGULATOR	ALUMINUM								
100	100-030	1	MINI-REGULATOR	ALUMINUM								
100	100-031	1	MINI-REGULATOR	ALUMINUM								
100	100-032	1	MINI-REGULATOR	ALUMINUM								
100	100-033	1	MINI-REGULATOR	ALUMINUM								
100	100-034	1	MINI-REGULATOR	ALUMINUM								
100	100-035	1	MINI-REGULATOR	ALUMINUM								
100	100-036	1	MINI-REGULATOR	ALUMINUM								
100	100-037	1	MINI-REGULATOR	ALUMINUM								
100	100-038	1	MINI-REGULATOR	ALUMINUM								
100	100-039	1	MINI-REGULATOR	ALUMINUM								
100	100-040	1	MINI-REGULATOR	ALUMINUM								
100	100-041	1	MINI-REGULATOR	ALUMINUM								
100	100-042	1	MINI-REGULATOR	ALUMINUM								
100	100-043	1	MINI-REGULATOR	ALUMINUM								
100	100-044	1	MINI-REGULATOR	ALUMINUM								
100	100-045	1	MINI-REGULATOR	ALUMINUM								
100	100-046	1	MINI-REGULATOR	ALUMINUM								
100	100-047	1	MINI-REGULATOR	ALUMINUM								
100	100-048	1	MINI-REGULATOR	ALUMINUM								
100	100-049	1	MINI-REGULATOR	ALUMINUM								
100	100-050	1	MINI-REGULATOR	ALUMINUM								

fig.41



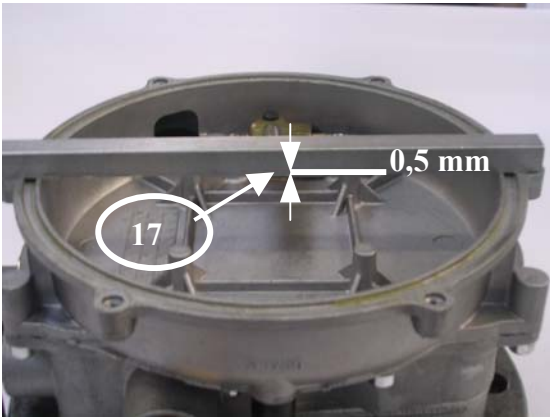
Turn the register to adjust the sensitivity of the regulator until it is 6.5 mm from the surface of the metal casing, see fig.42.

fig.42



Gauge for controlling the height of the low pressure lever.

fig.43



Check the height of the lever from the surface of the diaphragm n° 17 using the dedicated gauge. Correct distance 0.5 mm.

fig.44



Unscrew the ring nut that secures the diaphragm unit in place.

fig.45



Replace just the diaphragm with a new one.

fig.46



Install one of the two discs with outer edge facing downwards.

fig.47



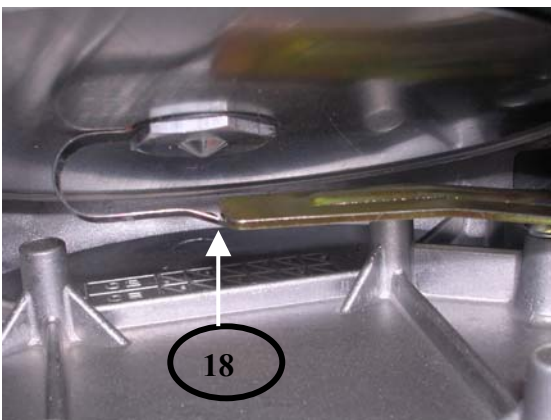
Insert the new diaphragm with the more enhanced outer sealing edge facing downwards.

fig.48



Insert the second disc with outer edge facing upwards, tighten the ring nut.

fig.49



Insert the diaphragm unit in the dedicated seat of the regulator making sure the spring is inserted under the lever and in line with the same, n° 18.

fig.50



Make sure the outer edge of the diaphragm sits in its seat. Grease the sealing zone.

fig.51



Put the lower pressure cover in position and tighten the six screws in cross sequence. Tightening torque: $6 \pm 0,4$ Nm.

fig.52

End of low pressure maintenance procedure

Start servicing the solenoid valve



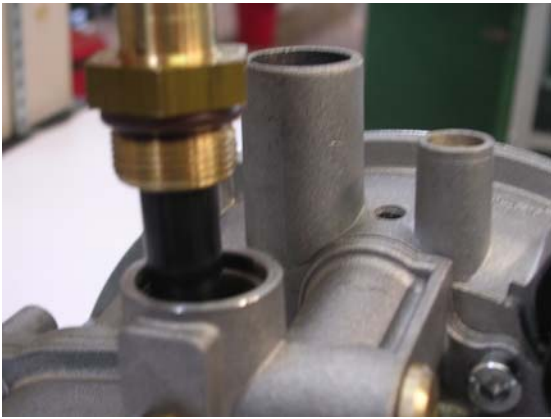
Unscrew the nut that secures the coil of the solenoid valve in place. Slide the coil out from the valve carrying unit.

fig.53



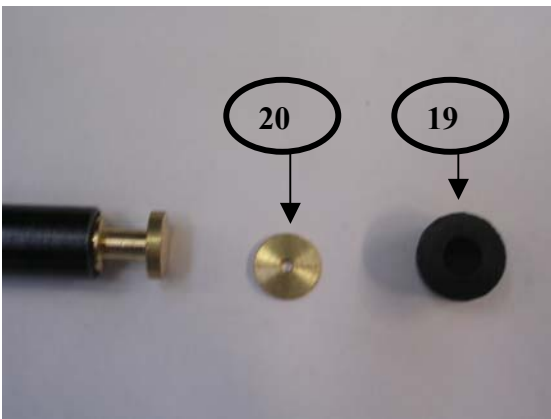
Unscrew the valve carrying unit.

fig.54



Take the mobile core out.

fig.55



Replace the rubber pad n° 19. When putting the mobile core back together, first insert the spacer inside the rubber pad with the outer radial edge facing the actual pad n° 20 then insert the rubber pad in the mobile core.

fig.56



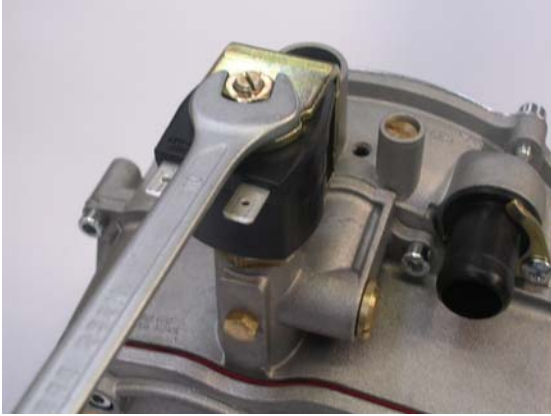
Insert the mobile core in the valve unit and put the valve unit in its seat.

fig.57



Screw the valve unit in place.

fig.58



Insert the coil and tighten the nut.

fig.59

End of solenoid valve maintenance procedure

Check the pressures of the First and Second stage



Bench test:

Unscrew the cap at the side of the regulator, screw the control gauge unit in place to check the pressure of the first stage.
(gauge 0 - 6 bar).

fig.60



Bench test:

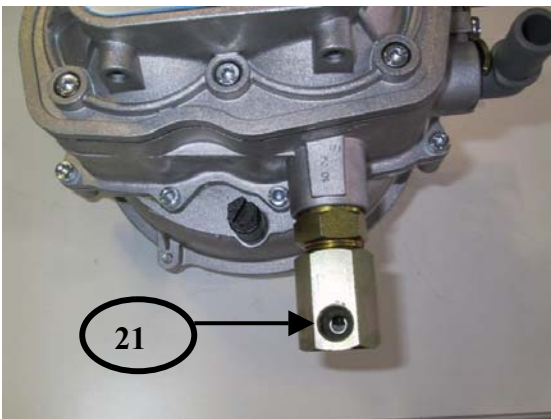
Unscrew the cap of the regulator, screw the control gauge in place to check the pressure of the second stage.
(gauge 0 – 2,5 bar).

fig.61



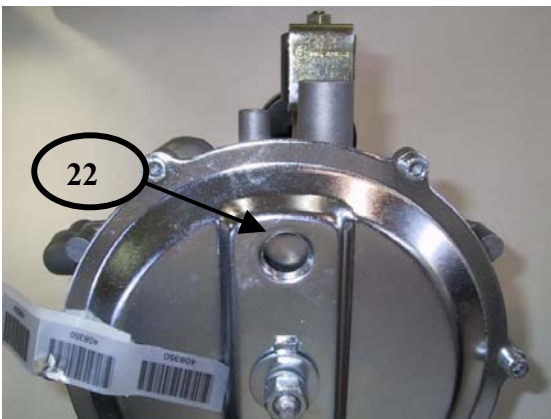
Using a 12-V feeder, energise the coil of the solenoid valve.

fig.62



Supply the regulator from the inlet fitting n° 21 with compressed air at 14 bar.

fig.63



Press the LP diaphragm through the hole in the cover n° 22 and check if the pressures correspond with the values indicated in the table relative to the type of regulator, completely open or closed.

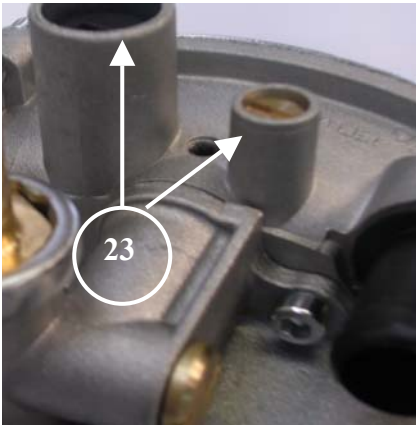
fig.64

The values are expressed in bar.

	Standard		Super		Super +		Uprated	
	1st stage	2 nd stage	1st stage	2 nd stage	1st stage	2 nd stage	1st stage	2 nd stage
Closed	2.2 - 2.4	0.6 - 07	2.2 - 2.4	0.6 - 07	2.2 - 2.4	0.7 - 08	3.6 - 3.8	0.9 - 1
Open	1.8	0.4	1.8	0.4	1.8	0.4	2.8	0.5

End of pressure tests of the first and second stage

Seal tests.



Continue to supply the regulator with compressed air at 14 bar, energise the solenoid valve at 12 volt, completely turn both registers to adjust the sensitivity of the regulator n° 23.

fig.65



Using leak-detector liquid or a “soap and water” solution, check the seal on the gas outlet fitting.

fig.66



Using leak-detector liquid or a “soap and water” solution, check the seal on the hole of the second stage.

fig.67



Supply the heating circuit with compressed air at 1 bar, from one water fitting, keeping the other closed. Use leak-detector liquid or a “soap and water” solution to check the seal between the two casings of the regulator.

fig.68

End of seal test

This is basically everything you need to do to service the regulator, then you can install it back on the vehicle again.

Check for gas leaks as soon as the vehicle is switched to gas.

Adjust the regulator.

If you have any difficulties during these maintenance jobs or you should notice any imperfections, please inform the engineering department of Tartarini Auto S.p.A. immediately.

Time schedule:

Removal of regulator from vehicle:	30 min.
Regulator maintenance:	40 min