

SEQUENTIAL FUEL INJECTION SYSTEM

LPG/CNG

SOFTWARE MANUAL

23/04/2007

Rev. 01

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: <u>info@tartariniauto.it</u> www.tartariniauto.it

INDEX:

SOFTWARE
/EHICLE CONFIGURATION6
AMBDA SENSOR13
GAS LEVEL15
SENSORS17
NJECTION MAP18
ENRICHMENTS21
GAS/PETROL22
ADAPTIVE FUNCTION27
NJECTORS CHECK
MODIFY CARBURATION29
DISPLAY
DIAGNOSIS
AUTOCALIBRATION
SAVE CONFIGURATION40
OAD CONFIGURATION41
ECU REPROGRAMMING42
rroubleshoting45

SOFTWARE

SOFTWARE INSTALLATION PROCEDURE

The "Sequential" software must be installed on a computer in order to be able programming the ECU. The minimum configuration of the laptop computer to run this software is the following:

Operative system: Windows 98 or later version.

Processor: 133 MHz

RAM: 16 Mb

Hard disk: 25 Mb

CD ROM drive

The software is self-installing; therefore simply insert the disc in the CD ROM drive and click on "NEXT" three times with the left button of the mouse.

Else, in case you will download from our website <u>www.tartariniauto.it</u> the updated zipped software version in the vehicle data sheet area, which is only possible to enter with your ID name and password, you will need first to unzip the downloaded file and install it by clicking twice on AUTORUN file.

Every new software version will substitute previous ones, which may be eliminated. The software described in this manual is version **5.0.0**

Once the software installation procedure is complete, double click on the "Sequential" icon of the desktop. The following page will be displayed. This page is used to program the ECU of the Sequential system.



The following functions are available in the "MAIN MENU":

F1 > VEHICLE CONFIGURATION

This menu is used to display the configuration data of the vehicle, saved in the Sequential control unit.

F2 > DISPLAY

Selecting this menu allows to display the main signals of the vehicle in real time: Engine rpm signal / petrol injection timing / Gas injection timing / Lambda sensor signal / regulator temperature / regulator pressure / battery voltage / type of fuel.

F3 > DIAGNOSIS

Every time an error occurs in the SGI system, it is possible to display it and to reset it throughout this menu.

The area dedicated to the servicing of the system will display the effective time ran on gas since the last service. Installer must reset the system clock every time after service.

F4 > AUTOCALIBRATION

This menu allows to calibrate the system in idle, without any accelerating.

F5 > SAVE CONFIGURATION

F6 > LOAD CONFIGURATION

These menus are used to store and reload the complete vehicle configuration files of your choice.

F7 > ECU REPROGRAMMING

This menu is used for reprogramming the ECU with an updated Firmware released by our Tartarini Auto.

F8 > EXIT SOFTWARE

Closes your work by exiting the software.

F1 > VEHICLE CONFIGURATION



Selecting: "F1 > VEHICLE CONFIGURATION"

it is possible to chose the main settings in order to optimize the quality of the gas conversion.

CHANGE OVER

Vehicle configuration - Config: GPL_TAR_4CIL	
Change-over Lambda Gas level Sen	sors∣ Map∣Enrichments∣ Gas/petrol∣ Adaptive functior.ª●
Fuel type	Inj. Sequential
Injector type TARTARINI	Reducer <u>1 bar</u>
Displacement (cc)	1600
Type of revolution signal	Standard •
No. of cylinders	4 cylinders
Ignition type	One coil
Type of change-over	In acceleration
Revs. threshold for change-over	1600 rpm Warning! Do not disconnect
Reducer temperature for change-over	35 °C gasoline pump and do
Change-over from petrol-gas delay	30 s not run the car with low fuel.
Warning !!! You can change yellow paramet	ers only without sub-key.
PETROL Revs Orpm Tinj.gas 0,00 Lambda 1 N.C. Tinj.petrol 0,00 Lambda 2 N.C. Adaptive funct OFF	Temp.gas n.a. Diff.press. n.a. Temp.reducer n.a. Man.press. n.a. Absolute sensor

This page shows all the available settings.

IMPORTANT NOTICE: all **ORANGE** color settings need to be stored in ECU before they are effectively applied, therefore these settings must be changed only **with car-key OFF**.

Vehicle configuration - Config: GPL_TAR_4CIL Configuration Configuration Change-over Lambda	🗖 🔁 🔀 Gas level Sensors Map Enrichments Gas/petrol Adaptive functior
Fuel type LPG LPG Injector type Methane	▼ Inj. Sequential ▼ Reducer <u>1 bar ▼</u>
Displacement (cc)	1600
Type of revolution signal	Standard 🔽
No. of cylinders	4 cylinders
Ignition type	One coil
Type of change-over	In acceleration
Revs. threshold for change-over	1600 rpm Warning! Do not disconnect
Reducer temperature for change-over	35 °C gasoline
Change-over from petrol-gas delay	30 s not run the car with low fuel.
Warning !!! You can change y	ellow parameters only without sub-key.
PETROL Revs Orpm Tinj.gas Lambda 1 N.C. Tinj.petrol Lambda 2 N.C. Adaptive funct	0,00 Temp.gas n.a. Diff.press. n.a. 0,00 Temp.reducer n.a. Man.press. n.a. OFF Absolute sensor

Fuel Type

By selecting the fuel type (LPG/Methane) ECU will automatically reset its calculation parameters according to the selected fuel.

Vehicle configuration - Config: GPL_TAR_4CIL Configuration	nge-over Lambda G	ias level∣Senso	rs Map Enrichme	nts Gas <i>i</i>	/petrol Ac	aptive functior 🖓
GAS EQUIPMENT Fuel type Injector type	LPG TARTARINI	•	Inj. S Reducei M	equenti equenti J seque	al al ential	-
Displacement (cc) Type of revolution signal No. of cylinders			Standard 4 cylinder One coil	s	•	
Type of change-over Revs. threshold for chang	je-over		In acceler 1600 rr	ation om		Warning! Do not
Reducer temperature for Change-over from petrol-	change-over gas delay		35 °(30 s	:		disconnect gasoline pump and do not run the car with low fuel.
PETROL Revs Orpm Lambda 1 N.C. Lambda 2 N.C.	You can change yel Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 0,00 OFF	s only without sub Temp.gas Temp.reducer	<mark>-key.</mark> n.a. n.a.	Diff.pres Man.pre Abs	s. n.a. ss. n.a. olute sensor

Injection

In order to select the correct kind of injection, verify the following conditions:

- 1) Petrol injection times at 6000 rpm between 15 & 20 ms. select Sequential.
- 2) Petrol injection times at 6000 rpm between 8 & 10 ms. Select Full-group.
- 3) If vehicle performs multiple and unstable injections at high rpm/loads select MJ sequential

Vehicle configuration - Config: GPL TAR 4CIL	
Configuration	
Change-over Lambda Gas leve	I∣ Sensors∣ Map∣ Enrichments∣ Gas/petrol∣ Adaptive functior ^{Ene}
Fuel type LPG • Injector type TARTARINI •	Inj. <mark>Sequential ▼</mark> Reducer <mark>1 bar ▼</mark>
Displacement (cc) TARTARINI	1600
Type of revolution signal TARTARINI EVO	Standard •
No. of cylinders	<mark>4 cylinders</mark>
Ignition type	One coil
Type of change-over	In acceleration 🗾
Revs. threshold for change-over	1600 rpm Warning! Do not disconnect
Reducer temperature for change-over	35 ℃ gasoline
Change-over from petrol-gas delay	30 s pump and do not run the car with low fuel.
Warning !!! You can change yellow pa	rameters only without sub-key.
PETROL Revs 0rpm Tinj.gas 0,0 Lambda 1 N.C. Nic. Tinj.petrol 0,0 Lambda 2 N.C. N.C. Adaptive funct OF	0 Temp.gas n.a. Diff.press. n.a. 0 Temp.reducer n.a. Man.press. n.a. F Absolute sensor

Injector type

This setting allows selecting the correct type of injectors that are installed. ECU will automatically recalculate its parameters accordingly to the injectors **MATRIX** – **TARTARINI** – **TARTARINI** EVO.

Vehicle configuration - Config: GPL_TAR_4CIL	
Computation	Sensors Map Enrichments Gas/petrol Adaptive functior
Fuel type	Inj. Sequential
Injector type TARTARINI	Reducer <u>1 bar</u>
Displacement (cc)	1600 1 bar 1.2 bar
Type of revolution signal	Standard 🗾
No. of cylinders	4 cylinders 🚽
Ignition type	One coil
Type of change-over	In acceleration -
Revs. threshold for change-over	1600 rpm Warning! Do
Reducer temperature for change-over Change-over from petrol-gas delay	35°Cdisconnect30sgasoline30snot run the car with low ruel.
Warning !!! You can change yellow para	meters only without sub-key.
PETROL Revs Orpm Tinj.gas 0,00 Lambda 1 N.C. Tinj.petrol 0,00 Lambda 2 N.C. Adaptive funct OFF	Temp.gas n.a. Diff.press. n.a. Temp.reducer n.a. Man.press. n.a. Absolute sensor

Reducer:

This option allows converting high power vehicles.

It is possible to raise manually the pressure from 1 bar to 1,2 bar by operating on pressure screw on the RPG05S pressure regulator. Make sure to select the correct pressure value you have set manually on the pressure regulator.

This option is valid only for LPG pressure regulator RPG05S. The manual adjustment of pressure must be done in idle on LPG.

Vehicle configuration - Config: GPL_TAR_4CIL	
Computation	nsors Map Enrichments Gas/petrol Adaptive functior
Fuel type	Inj. Sequential
Injector type TARTARINI	Reducer <mark>1 bar -</mark>
Displacement (cc)	1600 (900;8000)
Type of revolution signal	Standard 🚽
No. of cylinders	4 cylinders
Ignition type	One coil
Type of change-over	In acceleration -
Revs. threshold for change-over	1600 rpm Warning! Do
Reducer temperature for change-over	35 ℃ gasoline pump and do
Change-over from petrol-gas delay	S not run the car with low fuel.
Warning !!! You can change yellow paramet	ters only without sub-key.
PETROL Revs Orpm Tinj.gas 0,00 Lambda 1 N.C. Tinj.petrol 0,00 Lambda 2 N.C. Adaptive funct OFF	Temp.gas n.a. Diff.press. n.a. Temp.reducer n.a. Man.press. n.a. Absolute sensor

Displacement (cc).

This option allows setting the displacement of the car.

Vehicle configuration - Config: GPL_TAR_4CIL	
Change-over Lambda Gas I	evel∣ Sensors Map Enrichments Gas/petrol Adaptive functior,⊓
Fuel type	Inj. Sequential
Injector type TARTARINI 🔽	Reducer <mark>1 bar -</mark>
Displacement (cc)	1600
Type of revolution signal	Standard -
No. of cylinders	Standard Weak
Ignition type	One coil
Type of change-over	In acceleration -
Revs. threshold for change-over	1600 rpm Warning! Do
Reducer temperature for change-over Change-over from petrol-gas delay	35 ∘c disconnect gasoline 30 s pump and do not run the car with low
Warning !!! You can change yellow	parameters only without sub-key.
PETROL Revs 0rpm Lambda 1 N.C. Tinj.gas Tinj.petrol Adaptive funct	0,00 Temp.gas n.a. Diff.press. n.a. 0,00 Temp.reducer n.a. Man.press. n.a. OFF Absolute sensor

Type of revolution signal.

WEAK signal must be selected when the input signal is taken from the transistor pilot signal of the ignition coils.

STANDARD signal must be selected when the input signal is taken from the negative pole of ignition coils.

In case signal is taken directly from rpm meter, either one of the options can be selected. However in this last case it is suggested to select WEAK signal.

Vehicle configuration - Config: GPL_TAR_4CIL			
Configuration			
auto Industries Change-over	Lambda Gas level Senso	ors Map Enrichments Gas	/petrol Adaptive functior
GAS EQUIPMENT			
Fuel type LPG	-	Inj. <mark>Sequent</mark> i	ial 🗸
Injector type TARTAR	INI 🔽	Reducer	1 bar 🔽
Displacement (cc)		1600	
Type of revolution signal		Standard	-
No. of cylinders		4 cylinders	-
Ignition type		3 cylinders 4 cylinders	
Type of change-over		In acceleration	_
Revs. threshold for change-over		1600 rpm	Warning! Do
Peducer temperature for change-	over	35	disconnect
		30	pump and do
Change-over nom perior-gas dela	y I	5	car with low fuel.
Warning !!! You can	change yellow parameter	s only without sub-key.	
PETROL Revs Orpm Tinj.gas Lambda 1 N.C. Tinj.petr Lambda 2 N.C. Adaptive	0,00 ol 0,00 funct OFF	Temp.gas n.a. Temp.reducer n.a.	Diff.press. n.a. Man.press. n.a. Absolute sensor

Number of cylinders.

This option is used to inform the ECU about how many cylinders the vehicle has and therefore how many injectors it has to read and pilot.

Vehicle configuration - Config: GPL_TAR_4C	L					- 2 🛛
Configuration						
TARTARINI auto industries	Change-over Lambda G	as level Senso	rs Map Enrichments	s Gasi	/petrol A	daptive function
945 EQUIPMENT			_			
Fuel type	LPG	<u> </u>	Inj. <mark>Seq</mark>	uenti	al	-
Injector type	TARTARINI	-	Reducer		1 bar	•
Displacement (cc)			1600			
Type of revolution sigr	al		Standard		•	
No. of cylinders			4 cylinders		•	
Ignition type			One coil		•	
Type of change-over			One coil Two coils			
Revs. threshold for ch	ange-over		RPM sensor			Warning! Do
				2		not disconnect
Reducer temperature f	or change-over		35 °C			gasoline
Change-over from petr	ol-gas delay		30 s			not run the
						fuel.
Warnin	g !!! You can change yel	low parameter	s only without sub-k	ey.		
PETROL Revs Or Lambda 1 N Lambda 2 N	C. Tinj.gas .C. Tinj.petrol .C. Adaptive funct	0,00 0,00 OFF	Temp.gas Temp.reducer	n.a. n.a.	Diff.pres Man.pre Abs	ss. n.a. ss. n.a. olute sensor

Type of ignition.

The control unit to calculate the engine rpm correctly uses this function.

Select ONE COIL if the vehicle has one coil for each cylinder and the rpm signal is taken from the negative pole of the coil. Select TWO COILS if the vehicle has one coil that pilots two cylinders and the rpm signal is taken from the negative pole of the coil. Select RPM sensor in other cases. Some 5/6 or 8 cylinder cars may request the selection of RPM sensor 2.

Vehicle configuration - Config: CDL_TAD_ACI	
Configuration	
Change-over Lambda Gas level	Sensors Map Enrichments Gas/petrol Adaptive functior
Fuel type LPG Injector type TARTARINI	Inj. <mark>Sequential •</mark> Reducer <mark>1 bar •</mark>
Displacement (cc)	1600
Type of revolution signal	Standard 🔽
No. of cylinders	4 cylinders
Ignition type	One coil
Type of change-over	In acceleration 🚽
Revs. threshold for change-over	In acceleration In deceleration Warning! Do not discomment
Reducer temperature for change-over	35 °C gasoline
Change-over from petrol-gas delay	30 s pump and do not run the car with low fuel.
Warning !!! You can change yellow para	meters only without sub-key.
PETROL Revs Orpm Tinj.gas 0,00 Lambda 1 N.C. Tinj.petrol 0,00 Lambda 2 N.C. Adaptive funct OFF	Temp.gas n.a. Diff.press. n.a. Temp.reducer n.a. Man.press. n.a. Absolute sensor

Type of Change-over.

This option allows setting the desired change-over mode from Petrol to Gas:

In **acceleration**: change-over will be executed when engine rpm rise higher than the revolution threshold set for switching to gas (rpm selected + 100rpm).

In **deceleration:** change-over will be executed when engine rpm falls lower than the revolution threshold set for switching to gas (rpm selected + 100rpm).

It is suggested anyway to select change-over in acceleration.

Vehicle configuration - Config: GPL_TAR_4CIL					
Configuration			_		
	ange-over Lambda G	as level Senso	rs Map Enrichmen	ts Gas/p	etrol Adaptive functior
GAS EQUIPMENT					
Fuel type	LPG	_	Inj. 📴	quentia	· ·
Injector type	TARTARINI	-	Reducer		1 bar 🔽
Displacement (cc)			1600		
Type of revolution signa			Standard		•
No. of cylinders			4 cylinders		•
Ignition type			One coil		•
Type of change-over			In accelera	tion	
Revs. threshold for chan	ge-over		1600 гр	m 🤇	00;3000) _{arning!} Do
			35		disconnect
Reducer temperature for	change-over		30° °C		pump and do
Change-over from petrol	-gas delay		30 s		not run the car with low
Warning	II You can change yell	ow parameter	s only without sub	key	fuel.
• • • • • • • • • • • • • • • • • • •		ow parameters	s only without sub-	key.	
PETROL Revs Orpm Lambda 1 N.C Lambda 2 N.C	Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 0FF	Temp.gas Temp.reducer	n.a. n.a.	Diff.press. n.a. Man.press. n.a. Absolute sensor

Revolutions threshold for change-over.

This setting fixes the minimum engine rpm threshold for change-over from petrol to gas (500;3000).

It is suggested to set 1600 rpm. Furthermore this setting must never be lower than the regular idle rpm of the car.

Vehicle configuration - Config: GPL_TAR_4CIL Configuration Change-over Lambda Gas level Sense	ors Map Enrichments Gas/petrol Adaptive functior
GAS EQUIPMENT Fuel type LPG Injector type TARTARINI Displacement (cc)	Inj. <mark>Sequential •</mark> Reducer <mark>1 bar •</mark> 1600
Type of revolution signal No. of cylinders Ignition type	Standard - 4 cylinders - One coil -
Type of change-over Revs. threshold for change-over	In acceleration
Change-over from petrol-gas delay Warning !!! You can change yellow parameter	30 s pump and do not run the car with low fuel.
PETROL Revs Orpm Tinj.gas 0,00 Lambda 1 N.C. Tinj.petrol 0,00 Lambda 2 N.C. Tinj.petrol 0,00	Temp.gas n.a. Diff.press. n.a. Temp.reducer n.a. Man.press. n.a. Absolute sensor

Reducer temperature for change-over.

This option will set the minimum temperature the pressure regulator has to reach in order to change-over from petrol to gas. (+20°;+90°).

(When using LPG pressure regulator G/Seq. it is suggested to select 35° C) (When using LPG pressure regulator RP/G 05S it is suggested to select 40° C) (When using CNG pressure regulator RP/M04S it is suggested to select 35° C)

Vehicle configuration - Config: GPL_TAR_4CIL			
<u>Configuration</u>		_	
Change-over Lambda G	as level∣Sensor	rs Map Enrichments (Gas/petrol∖Adaptive functior <mark>P</mark> B
Fuel type LPG	_	Inj. <mark>Seque</mark>	ential 🗾
Injector type TARTARINI	-	Reducer	1 bar 🔽
Displacement (cc)		1600	
Type of revolution signal		Standard	•
No. of cylinders		4 cylinders	•
Ignition type		One coil	<u>-</u>
Type of change-over		In acceleration	n <u>-</u>
Revs. threshold for change-over		<mark>1600</mark> грм	Warning! Do not
Reducer temperature for change-over		³⁵ ℃	disconnect gasoline
Change-over from petrol-gas delay		30 s	(25;250) not run the car with low fuel.
Warning !!! You can change ye	low parameters	only without sub-key.	
PETROL Revs Orpm Tinj.gas Lambda 1 N.C. Tinj.petrol Lambda 2 N.C. Adaptive funct	0,00 0,00 OFF	Temp.gas Temp.reducer	n.a. Diff.press. n.a. n.a. Man.press. n.a. Absolute sensor

Change- over from Petrol to gas delay.

This setting allows the user to select the minimum time for change-over from petrol to gas. (25s -250s). Suggested setting is 30s.

In any case there will be change-over only if also both reducer temperature and revolution threshold settings are respected.

LAMBDA



Number of Lambda probes.

This option allows the SGI ECU to correctly understand the number of Lambda sensors fitted before the catalytic converter

Configuration	ION - Config: GPL	TAR_4CIL Char	nge-over Lambda	I Gas level∣ Sense	ors Map Enrichments	Gas/	/petrol Adaptive functior
Numb Secon	er of banks Id engine ba	nk corre	ctor		2 <u>-</u>	C	-20;20)
Type of pre-catalytic oxygen sensor Oxygen Sensor 1 (purple wire)					0 - 1 Volt		
Охуде	en Sensor 2	(purple/b	lack wire)		Not connecte	d	•
PETROL	Revs Lambda 1 Lambda 2	0rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 0,00 0,00 OFF	Temp.gas Temp.reducer	n.a. n.a.	Diff.press. n.a. Man.press. n.a. Absolute sensor

Second engine bank corrector.

By selecting 2 Lambda probes, the **second engine bank corrector** will appear. This function allows balancing the calibration of two engine banks. Should the value of the 2nd lambda probe be too rich or too lean, it is possible to correct the carburetion of the 2nd engine bank by increasing or decreasing the value of the second engine bank corrector.



Type of pre-catalytic oxygen sensor.

This option allows the ECU to correctly recognize the type of lambda signal.

Vehicle configuration - Config: GPL_TAR_4CIL Configuration TRACETARINI Internation CAS_EQUIPMENT	Lambda Gas level. Senso	ərs Map Enrichments Gas/	oetrol Adaptive functior 🕫
Number of banks		2 _	
Second engine bank corrector		0	
Type of pre-catalytic oxygen sens Oxygen Sensor 1 (purple wire)	or	0 - 1 Volt Not connected	▼
Oxygen Sensor 2 (purple/black wir	·e)	Not connected Pre Post	
PETROL Revs Orpm Tinj.gas Lambda 1 N.C. Tinj.petr Lambda 2 N.C. Adaptive	ol 0,00 0,00 ol 0,00 0,00 e funct OFF	Temp.gas n.a. Temp.reducer n.a.	Diff.press. n.a. Man.press. n.a. Absolute sensor

Lambda sensor 1 (purple wire)

Our system offers 3 possibilities:

- 1) We don't connect any wire by selecting **not connected** and we will read the signal of Lambda sensor 1 from the tester plugged into the car EOBD plug.
- 2) We connect only the purple wire for reading just the signal of the Lambda sensor placed before the catalytic converter, and select **pre.**
- 3) We connect both violet and gray wires, in order to emulate the lambda sensor placed after the catalytic converter, and select **post**.

Please, contact first Tartarini Service in case your choice is number 3).

Vehicle configuration - Config: GPL_TAR_4CIL Configuration	ange-over Lambda	a Gas level∖Sensc	ırs Map Enrichments C	📮 🖲 🔀 Sas/petrol Adaptive functior
Number of banks			2	
Second engine bank cor	rector		0	
Type of pre-catalytic oxy Oxygen Sensor 1 (purple	rgen sensor : wire)		0 - 1 Volt Not connected	-
Oxygen Sensor 2 (purple	/black wire)		Not connected Not connected Pre Post	·
PETROL Revs Orpi Lambda 1 N.0 Lambda 2 N.0	n Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 0,00 0,00 OFF	Temp.gas r Temp.reducer r	n.a. Diff.press. n.a. Man.press. n.a. Absolute sensor

Lambda sensor 2 (purple/black wire)

Our system offers 3 possibilities:

- 1) We don't connect any wire by selecting **not connected** and we will read the signal of Lambda sensor 2 from the tester plugged into the car EOBD plug.
- 2) We connect purple/black wire for reading the signal of the Lambda sensor 2 placed after the catalytic converter, and select pre.
- 3) We connect both purple/black & gray/black wires in order to emulate the Lambda sensor 2 placed after the catalytic converter, and select **post**.

Please, contact first Tartarini Service in case your choice is number 3).



GAS LEVEL

Type of GAS level sensor.

This function is used to select the correct gas level sensor fitted in the vehicle. "A E B" is the most common selection for most the sensors in commerce, including ours. "0 - 90 ohm " is the correct choice for sensors with 0 - 90 ohm signal characteristics. "0-90 ohm modified" this choice allows you to set manually the 0-90 ohm sensors.

Vehicle con Configuration	Affiguration - Config: GPL_TAN Industries AS EQUIPMENT	t_4ClL Change-over∣Lambda	ı Gas level Senso	rs Map Enrichmen	ts Gas/petrol Adapt	ive functior 🖓 🍽
T <u>y</u>	ype of GAS level s <u>G</u> as electrovalves	ensor opened in advance		<mark>0-90 ohm m</mark>	odified	•
	eferences for mod Reserve 1/4 2/4 3/4 Press to confirm	fied sensor		9 25 52 77 <u>Accept</u>		
PETRO	L Revs Lambda 1 Lambda 2	Orpm N.C. N.C. Adaptive funct	0,00 0,00 0,00 0,00 OFF	Temp.gas Temp.reducer	n.a. Diff.press. n.a. Man.press. Absolut	n.a. n.a. e sensor

0 – 90 ohm modified:

We have the possibility to set the exact resistance related to each LED of the switch. We can therefore decide with how much GAS the red reserve LED and the other green LEDS are to light up.

When using this option, you need to adjust by minimum 20 points per attempt.

🔀 Vehicle configuratio	on - Config: GPL_TAR	R_4CIL							- 🗗 🗙
Configuration		-				_			
	ARINI	Char	nge-over Lambda	Gas level	Senso	ors Map Enrichm	ients Gas/	/petrol∣Adaptive fu	nctior.
GAS EQU	IPMENT								
Туре о	f GAS level se	ensor				Tartarini	or A.E.B	. 🔹	
🖬 Gas	electrovalves	opene	d in advance						
		<u>}</u>	ehicle configuration -	Config: GPL	TAR_4CI	L 🔀			
			Warning!!! With t	his strategy runn	ing do not o	cut off the petrol pump			
				ОК					
	-					L_			
PETROL	Revs Lambda 1	0rpm N.C.	Tinj.gas Tinj.petrol	0,00	0,00	Temp.gas Temp.reducer	n.a. n.a.	Diff.press. Man.press.	n.a. n.a.
	Lambda 2	N.C.	Adaptive funct	OF	-			Absolute sen:	sor

GAS electrovalves opened in advance:

When the change over from petrol to gas begins, the gas solenoid valves are set in order to open for just 1 second for filling the gas hoses. Then after closing, they'll open back definitively when the car switches to gas. By selecting this option the gas solenoid valves will remain opened more time to fill more the gas hoses.

WARNING: don't ever disconnect the gasoline pump if you chose this option!!!

SENSORS

Vehicle configuration - Config: GPL_TAR	_4CIL			
Configuration				
TARTARINI	Change-over Lambda	a Gas level <mark>S</mark> e	nsors Map Enrichments Gas/	petrol∣Adaptive functior.
GAS EQUIPMENT				
Type of pressure ser	sor		Absolute (2nd version)	-
Type of pressure set	1301.		Differential (1st version)	
			Absolute (2nd version)	
·				
PETROL Revs Lambda 1	Orpm Tinj.gas N.C. Tinj.petrol	0,00 0, 0,00 0,	00 Temp.gas n.a. 00 Temp.reducer n.a.	Diff.press. n.a. Man.press. n.a.
Lambda 2	N.C. Adaptive funct	OFF		Absolute sensor
	1			
		•		•
Diff proces			Diff press	na
Diff.press.	. r	1.a.	Din.pross.	11. a.
Man.press	s. r	n.a.	Man.press.	n.a.
Differen	atial association		Absolute	sensor
Differen	ntial sensol		Absolute	5 3011301

Type of pressure sensor. This function allows the choice of the type of gas pressure sensor that is installed on the vehicle:

Differential (1st version) This sensor reads only the regulator pressure. Absolute (2nd version)

Together with the gas pressure of the regulator you will also read the manifold pressure.

MAP

Vehicle configura	ation - Config: GPL	_TAR_4CIL						
		Chang	ge-over∖Lambd	a Gas level	Sensors Ma	Enrichment	ts∣Gas/petro	I Adaptive function
	t inj/rpm	1000	2000	3000	4000	5000	6000	
	2,00	110	111	113	118	120	122	
	2,50	110	113	115	120	122	124	
	3,00	120	124	125	130	132	134	
	3,50	126	131	133	138	140	141	
	4,50	130	136	138	141	142	144	
	6,00	129	134	136	140	141	143	
	8,00	124	129	131	136	138	140	
	10,00	114	118	120	125	126	128	
	12,00	107	110	112	116	118	120	
	14,00	104	107	110	114	115	118	_
	16,00	104	107	109	113	115	116	_
	18,00	102	105	108	111	113	115	
Mo	dify map re	fs.		Switch	from PC			
PETROL	Revs Lambda 1 Lambda 2	0rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 OFF	Temp Temp	gas reducer	n.a. Diff. n.a. Man	press. n .press. n Absolute sensor

Map is done according to engine revolutions and gasoline injection times.

This page gives the opportunity to change the gas values resulted after the autocalibration for obtaining a better solution at each and every driving condition.

To modify the values, simply select one or more cells, press the ENTER key and the following page will appear with three different modes for effecting the value corrections: 1) Absolute

- 2) Linear
- 3) Percentage

THE DEFAULT MODE IS: Linear

t inj/rpm	1000	2000	3000	4000
2,00	10	111	113	118
2,50	110	113	115	120
3,00	120	124	125	130
3,50	126	131	133	138
4,50	130	1 Modify	value	
6,00	129	1 🔟		<u>o</u> k
8,00	124	1. Mode		Cancel
10,00	114		∿bsolute inear	
12,00	107	1 08	ercentage	
14,00	104	107	TTU	114

Absolute mode:

The value will be accepted exactly as it is typed. Example $110 + 10 \rightarrow 10$

t inj/rpm	1000	2000		3000	4000				
2,00	120	111		111		113	118		
2,50	110	113		113		113		115	120
3,00	120	124		125	130				
3,50	126	131		133	138				
4,50	130	1 ***	dify v	/alue					
6,00	129	1	10		<u>o</u> ĸ				
8,00	124	1	Mode		Cancel				
10,00	114	1 C <u>A</u> bsolute © Linear							
12,00	107	1	O <u>P</u> e	rcentage					
1/ 00	104	1							

Linear Mode:

The value will be mathematically ADDED in the cell: Example $110 + 10 \rightarrow 120$

t inj/rpm	1000	2000		3000	4000)
2,00	121	111		113	118	
2,50	110	113		115	120	
3,00	120	124		125	130	
3,50	126	131		133	138	
4,50	130	1	dify v	<i>r</i> alue		4
6,00	129	1	10		<u>о</u> к	
8,00	124	1	Mode		<u>C</u> ancel	
10,00	114	1				
12,00	107	1	• Pe	rcentage		
11.00	104	1				

Percentage Mode: The value will be applied as a percentage: Example 110 + 10 = 121

icle configurati ation	ion - Config: GPL	_TAR_4CIL							
TART	ARINI	Chang	je-over∣Lambo	da Gas level	Sensors Map	Enrichments	Gas/petrol	Adaptive	functi
GAS EQU	IPMENT								
	t inj/rpm	1000	2000	3000	4000	5000	6000	1	
	2,00	110	111	113	118	120	122		
	2,50	110	113	115	120	122	124		
	3,00	120	124	125	130	132	134		
	3,50	126	131	133	138	140	141		
	4,50	130	136	138	141	142	144		
	6,00	129	134	136	140	141	143		
	8,00	124	129	131	136	138	140		
	10,00	114	118	120	125	126	128		
	12,00	107	110	112	116	118	120		
	14,00	104	107	110	114	115	118		
	16,00	104	107	109	113	115	116		
	18,00	102	105	108	111	113	115		
			1						
Mod	iny map ref	s.		Stop swite	in from PC		<u>S</u> w	ncn	
ETROL	Revs Lambda 1 Lambda 2	0rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 0,00 OFF	Temp. Temp.i	gas reducer	n.a. Diff.pr n.a. Man.p At	ess. ress. osolute s	r r ensor

Switch from PC:

On the right side will appear another button "**switch**" that will allow you to command the switch directly from the PC.

While driving the car for checking the carburetion, it will be enough to click on "switch" in order to change over from petrol to gas and from gas to petrol.

When the carburetion control is complete, click on "stop switch from PC".

Map cell centres of the k coefficient	X
REVS. columns (rpm)	Time lines (ms)
1 1000	1 2
	2 2,5
2 2000	3 3
	4 3,5
3 3000	5 4,5
	6 6
4 4000	7 8
	8 10
5 5000	9 12
	10 14
6 6000	11 16
	12 18
OK	Cancel

Modify map references:

This option will open a window for modifying the references of rpm (left column) and injection time (right column). It might be helpful in very rare conditions where a more precise adjustment of the carburetion is needed. However **Tartarini Auto does not advise you to modify the basic settings.**

ENRICHMENTS

Vehicle configuration - Config: GPL_TAR Configuration	_4CIL Change-over∣Lambda∣Gas	level Sensors Map Enrichmer	nts Gas/petrol Adaptive function	
	Extra inj Sensitivi	ty +		
	Enrichment in	acceleration		
PETROL Revs Lambda 1 Lambda 2	N.C. N.C. N.C. Adaptive funct	0,00 Temp.gas 0,00 Temp.reducer OFF	n.a. Diff.press. n.a n.a. Man.press. n.a Absolute sensor	а. а.

Extra injections sensitivity:

When driving the vehicle at a constant speed it is possible to feel some jerking sometimes. Check the movement of the "ball" in the map when the jerking occurs. If it moves vertically, use the slider, clicking on positive/negative until the jerking is gone.

CNG: on CNG this option is used very rarely.

🗷 Extra	inj So	ensitiv	ity	
				+
			· · · · · ·	

Activated function.

If this option is not checked, it is not possible to move the slider. The software will act converting the extra-injections into standard injections.

Vehicle configuration - Config: GPL_TAR Configuration	_4CIL		
TARTARINI Juto Industries GAS EQUIPMENT	Change-over Lambda Ga	is level Sensors Map Enrichn	nents Gas/petrol Adaptive functior
	Z Extra inj Sensitiv	ity	
	Enrichment i	n acceleration	
PETROL Lambda 1 Lambda 2	Orpm N.C. N.C. Adaptive funct	0,00 Temp.gas 0,00 Temp.reducer OFF	n.a. Diff.press. n.a. n.a. Man.press. n.a. Absolute sensor

Enrichment in acceleration.

During a fast acceleration, if the injection times rise high with a vertical peek, we obtain an excess of enrichment that causes an incorrect output of power. In this case, use the slider, clicking on the negative sign until the defect is gone.

LPG: on LPG this option is used very rarely.

GAS/PETROL

	ere comigaration comig. ar c_n	u/Turent						
Configura	ation							
	TARTARINI auto industries GAS EQUIPMENT	Change-over Lambda Ga	s level Sensors Map Enrichm	ents Gas/petrol Adaptive fu	unctior.			
☑ sequentially switch from petrol to gas								
	Anticipate the inject	ion sequence						
	_ <i></i>							
	Operation at minimu	n			8			
	• Gas	Return to petrol	Return to petrol					
	└ ┌Operation at high RP	M						
	Operation at high RP	M			8 8			
	⊂Operation at high RP o Gas	M ● Petrol						
	└ ┌Operation at high RF ○ Gas	M ● Petrol			3			
	Operation at high RP	M ● Petrol						
	Operation at high RF	M ● Petrol			4			
	Operation at high RF	M ● Petrol						
	_Operation at high RF o Gas	M ● Petrol			1			

Sequentially switch from petrol to gas.

Selecting this option, the change-over will be done in a sequence one cylinder after the other one.

This option is suggested for all vehicles.

It may be unchecked only when the change-over happens to be irregular.

Vehicle configuration Con Configuration	Fig: CPL_TAR_4CIL Chain switch from p ne injection sec	nge-over Lambda etrol to gas juence	Gas level∣Senso	rs Map Enrichme	ents Gas/	petrol Adaptive 1	functior
Operation at o Gas -Operation at o Gas	high RPM	Return to petrol Anticipate the injection Operation completed succe	n sequence sruly, turn-OFF AND RE-	Petrol START THE VEHICLE!]
PETROL Revs Lamb Lamb	878rpm da 1 N.C. da 2 N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,86 OFF	Temp.gas Temp.reducer	12°C 70°C	Diff.press. Man.press. Absolute se	1,01bar 0,53bar nsor

Anticipate the injection sequence.

This option anticipates the injection sequence in order to solve some delay in the access of gas in the cylinders, therefore improving combustion and driving conditions.

Anticipate the injection sequence				
Operation completed successfully. TURN-OFF AND RE-START THE VEH	ICLE!			
OK				

Anticipate the injection sequence.

In order to anticipate the injection of gas it is necessary to switch the car to petrol, click on the side of the "Anticipate the injection sequence". The following pop-up window will appear, confirming the successful operation. Turn off the engine, restart it and switch to gas.

In case you face a malfunctioning while running on gas, switch back to petrol, click again on the side of "Anticipate the injection sequence" to avoid this function and to go back to the standard values.

Z Vehic Configura	tion	ion - Config: GPL	TAR_4CIL Char h from pe	nge-over Lambda etrol to gas	ı Gas level Sen	sors Map Enrichme	ents Gas	/petrol Adaptive	functior.
	Anticip	pate the inje	ction sec	Juence					
	_ ⊂Operatio	on at min <u>im</u> i	um						¬
	• Gas		• F	Return to petro	ы	 Petrol 			
	-Operatio	on at high R	РМ						_ _
	• Gas		• F	Petrol					
PE	TROL	Revs Lambda 1 Lambda 2	878rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,86 OFF	Temp.gas Temp.reducer	12°C 70°C	Diff.press. Man.press. Absolute s	1,01bar 0,53bar ensor

Operation at minimum:

Gas: vehicle runs only on gas.

🚺 Vehic	le configurat	ion - Config: GPL_1	AR_4CIL						
⊆onfigurat	ion:								
	TART suito industri Gas equ		Char	nge-over Lambda	Gas level∣ Senso	rs Map Enrichme	ents Gas/p	etrol Adaptive f	unctior.
☑ sequentially switch from petrol to gas									
■ Anticipate the injection sequence									
	Operatio	on at minimu	m						1
	• Gas		• F	Return to petrol		Petrol			
	RPM f	or identifyin	g minim	um		1100	rpm		
	Operatio	on at high Rf	•м						1
	• Gas		• F	Petrol					
									2
PE	TROL	Revs Lambda 1 Lambda 2	879rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,85 OFF	Temp.gas Temp.reducer	12°C 70°C	Diff.press. Man.press. Absolute se	1,00bar 0,53bar nsor

Operation at minimum:

•

Return to petrol: when rpm fall lower than the entered rpm value, system automatically switches to petrol. As soon as the idle is stable again, the system automatically switches back to gas.

Configuration	configurati	on - Config: GPL_	TAR_4CIL						- 7 🛛
		ARINI	Char	ige-over∣Lambda∣	Gas level∣ Senso	rs Map Enrichme	ents Gas/p	etrol Adaptive f	unctior.♥►
×	l sequer	ntially switch	n from pe	trol to gas					
	Anticip	ate the injed	ction seq	uence					
۲	Operatio	on at minimu	ım——						1 ⁻²
	Gas		• F	leturn to petrol		Petrol			
	RPM f	or identifyin	g minimu	m		1100	rpm		
۲	Operatio	on at high R	РМ						1
	 Gas 		• F	etrol					
PET	ROL	Revs Lambda 1 Lambda 2	879rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,86 OFF	Temp.gas Temp.reducer	11°C [70°C	Diff.press. Man.press. Absolute se	1,01bar 0,53bar nsor

Operation at minimum:

Petrol: under the typed rpm value, the system switches to petrol. It will remain on petrol until the rpm goes higher than the typed value.

Configuratio	e configurat	ARINI	TAR_4CIL Char	nge-over∣Lambda∣(Gas level∣ Senso	ors Map Enrichme	nts Gas/petrol Adaptive f	unctior.
	sequer Anticip	ntially switch pate the inject	n from po ction sec	etrol to gas juence				
ſ	Operatio ● Gas	on at minimi	um • F	Return to petrol		● Petrol		
	Operatio ● Gas	on at high R	PM • F	Petrol				
PET	ROL	Revs	878rpm	Tini gas	0.00	Temp gas	12°C Diff press	1.01bar
PE	ROL	Revs Lambda 1 Lambda 2	878rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,86 OFF	Temp.gas Temp.reducer	12°C Diff.press. 70°C Man.press. Absolute se	1,01bar 0,53bar nsor

Operation at high RPM: Gas: engine runs exclusively on gas.

Configurat	le configurat	ion - Config: GPL_TA	R_4CIL					- 8 🗙
	TART auto industri GAS EQL	ARINI	Char	nge-over Lambda (Gas level∣ Senso	rs Map Enrichmer	nts Gas/petrol Adaptive fu	unctior.
1	⊠ sequer	ntially switch	from pe	etrol to gas				
1	Anticipate the injection sequence							
Ĩ	Operatio	on at minimur	n					8
	 Gas 		• F	Return to petrol		Petrol		
								5
	Operatio	on at high RP	м					
	Gas		• F	Petrol				
	RPM f	or petrol ope	ration			4500	pm	
						45		
	Injecti	on time for ru	Inning	on petrol		15 n	ns	
PE	TROL	Revs Lambda 1	878rpm N.C.	Tinj.gas Tini.petrol	0,00 5.85	Temp.gas Temp.reducer	11°C Diff.press. 70°C Man.press.	1,00bar 0.53bar
		Lambda 2	N.C.	Adaptive funct	OFF		Absolute ser	nsor

Operation at high RPM: Petrol:

RPM for petrol operation, & Injection time for running on petrol, when very high performance is required it is possible to run the car on petrol. When the engine reaches both RPM and injection time limits, it switches automatically to petrol. It will switch back to gas as soon as at least one of the parameters go back lower than the limits.

All the above-mentioned operations of gas/petrol will not be visible by the manual switch in the vehicle. In fact the led lights on the switch will always light as if the vehicle is running on gas.

ADAPTIVE FUNCTION



Adaptive function:

The purposes of the adaptive function are more effective on smaller engine cars:

1) To compensate differences in LPG/ CNG mixture.

2) To compensate strain of kit components.

The Adaptive function can be activated only after auto-calibration at minimum.

Adaptive function on = **0%**

Adaptive function off = **OFF**



In order to obtain always the maximum performance of the adaptive function, it is suggested periodically to:

Final centering of petrol trimmers

- 1) During the periodical car service, in case the trimmer has reached +10% or -10%, slide the cursor to the right (increase) or to the left (decrease) copying exactly the value that appears on the side of Adaptive func.
- 2) Reset Adaptive Function

WARNING:

When Adaptive Function is ON, it is not possible to execute new autocalibrations and to modify carburetion values of the map.

🔏 Vehicle configura	ation - Config: GPL_	TAR_4CIL						- 7 🗙
Configuration		Lambda Ga	is level∣Senso	rs Map Enric	hments∣Gas/petrol	Adaptive fur	nction Inje	ctors chett
V	Enable adap	tive function						
			<u>R</u> eset adap	tive functio	n			
		-20%	Are you sure to	Config: GPL_TA reset adaptive function No	R_4CIL 🔀 pn? +20%			
	In G/	\S mode, after a p	erfect calibratio	n, petrol fuel tr	ims must remain clos	e to 0.		
	If after enabli	ng adaptive functio mode	n, they tend to to take them b	nove far from ick in the right	0, you should use this position.		S	
PETROL	Revs Lambda 1 Lambda 2	879rpm Tinj.ga N.C. Tinj.po N.C. Adapt	as etrol ive funct	0,00 5,73 0 %	Temp.gas Temp.reducer	12°C Diff. 70°C Man	press. press. Absolute s	1,01bar 0,53bar sensor
		Vehicle con	figuration	- Config:	GPL_TAR_4C	L		
		Are	e you sure to	reset adapt	ive function?			
			<u></u>		No			

Reset Adaptive Function:

By resetting the Adaptive Function, all the automatic corrections will be erased and the system will restore the previous map, set before the adaptive function was turned ON.

INJECTORS CHECK

🔀 Vehicle configurat	ion - Config: GP	PL_TAR_4CIL						P ×
⊆onfiguration								
Suto Industri GAS EQU		Gas	level Sensors N	lap Enrichments	Gas/petrol Adaptiv	e function	Injectors check Mod	dit işie)
_∫ diagnosis	of petrol i	njectors si	gnals ———				1	
	Α	в С	D					
	0	1 🖌	V					
v 🖌	- petrol inj	jector signal	correctly recei	ived 🏻 🏅	🎽 - petrol injector	⁻ signal not	received	
exclusion	of gas inje	ectors——						
	Α	в С	D					
	k on the pictu	ures to modify	the setting o	cylinder on ga	s	cylinder o	on petrol	
PETROL	Revs Lambda 1 Lambda 2	881rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,71 OFF	Temp.gas Temp.reducer	12°C D 70°C №	iff.press. 1,00b lan.press. 0,53b Absolute sensor)ar)ar

Diagnosis of petrol injectors signal

It verifies the correct connection of the cut-off injectors wiring, both in terms of polarity and cylinder sequence.

Configuration	tion - Config	: GPL_TAF	R_4CIL						- 🗗 🗙
			Gas le	evel Sensors	Map Enrichments	Gas/petrol∣Adaptiv	ve function	Injectors check	Modil
diagnosis	of petro	ol injec	tors sig	nals ——					ר
	Α	в	С	D					
	M	N	M	V					
C/	² - petrol	injecto	r signal	correctly rec	eived	🔀 - petrol injecto	r signal no	ot received	
exclusion	of gas i	njecto	rs						1
	A	В	С	D					
					<u> </u>	_			
	k on the p	ictures t	o modify t	he setting (cylinder on ga	is	cylinder	on petrol	
PETROL	Revs Lambda Lambda	8	81rpm N.C. N.C.	Tinj.gas Tinj.petrol Adaptive funct	0,00 5,71 t OFF	Temp.gas Temp.reducer	12°C 70°C	Diff.press. 1 Man.press. 0 Absolute sens	,00bar ,53bar sor

Exclusion of gas injectors

It gives possibility of checking each gas injector.

🗖 Vehicle co	nfiguration - Config: G	PL_TAR_4CIL					
⊆onfiguration							
	ARTARINI Industries	Sensors	Map Enrichments	s Gas/petrol <i>4</i>	Adaptive function Inje	ctors check Modi	fy carb. □□
	1000	2000	3000	4000	5000	6000	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
l l	0	0	0	0	0	0	
	0	0	0	0	0	0	
		0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
l i i	0	0	0	0	0	0	
	0	0	0	0	0	0	
l i i i i i i i i i i i i i i i i i i i	0	0	0	0	0	0	
	0	0	0	0	0	0	
Leaning as in Mazda (™) strategy					0		
PETRO	OL Revs Lambda 1 Lambda 2	881rpm Tin N.C. Tin N.C. Ada	i.gas i.petrol aptive funct	0,00 5,71 OFF	Temp.gas 7 Temp.reducer 7	I2°C Diff.press. 70°C Man.press. Absolute	1,00bar 0,53bar sensor

MODIFY CARBURATION

Modify carburetion.

This page allows to modify (+/-60) the gas map values obtained after the autocalibration even without USB pen drive "I" code 4822508 (with this USB pen drive, the installer can see and modify the real map values) both in idle and out of idle condition. Any modification done on this page will reflect on the real gas map values.

WARNING:

Using a "Tester" connected to the OBD connector (Tartarini code 4822016), check the fast/slow trimmers both at minimum and when driving on the road.

When working in Closed Loop, these trimmers must be as near as possible to 0.

When checking under power with the system in Open Loop, select the cells touched by the ball in Open Loop and decrease gradually the selected map values until the lambda probe value is lean, then increase back all the selected cells by 5 "units".

✓ Vehicle co Configuration	nfiguration - Config: Gl	PL_TAR_4CIL					
	AS EQUIPMENT	Sensors	Map∣Enrichments	∣ Gas/petrol ∣ Ada	aptive function∣Inje	ctors check Modif	y carb. 💴
	1000	2000	3000	4000	5000	6000	
	0	0	0		0	0	
3	0	0	0	0	0	0	
	0	0	0	0	0	0	
8	0	0	0	0	0	0	
	0	0	0	0	0	0	
8		0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	0	0	0	0	0	0	
	Leaning as in Mazda (™) strategy				0	<mark>(-50;0)</mark>	
PETRO	DL Revs	877rpm Tinj	.gas	0,00 Te	mp.gas 1	2°C Diff.press.	1,01bar
	Lambda 1 Lambda 2	N.C. Tinj N.C. Ada	.petrol ptive funct	5,71 Te OFF	mp.reducer 7	'0°C Man.press. Absolute	0,53bar sensor

Leaning as in Mazda® strategy.

During a maximum request for input power when the accelerator is completely pressed, you may encounter some jerking due to extra-injection, which can be seen by checking the "ball" in the map. If it continuously jumps vertically, decrease this value (-50;0) until the jerking is gone. Then make sure the mix of gas in open loop is not too lean.

LPG: this function is rarely used in LPG, since usually there is no need with this kind of fuel.



DISPLAY

Select from main menu F2- DISPLAY.

This menu allows displaying all the operating parameters.

Vehicle parameter display - Config: GPL_TAR_4CIL Acquisitions		
Revs P rpm	T.gas COO ms	T.petrol J , / ms
Temp.reducer Temp	p.gas Diff.press. I,II ba	r Man.press.
Fuel Petr Sub-key Batte	volt.	
	Exit	

This page allows displaying the values measured by the ECU, the operating modes and the injection times (gas or petrol).

To ensure a correct functioning, it is IMPORTANT that:

Engine rpm: the value of rpm is real

Gas inj. T: at minimum, according to the injector rail model, no lower than:

-Tartarini injectors: 4 ms -Tartarini EVO 07: 3ms -Matrix injectors: 3 ms

Petrol inj. T / Reg.T / Gas T: They must be legible

Regulator diff. Pressure: 1 bar LPG / 1,8 bar CNG in idle.

Vacuum Man. Pressure: 0,4 bar at minimum

Battery voltage: 13/14 volt

Lambda sensor: it must work in similar conditions, both on petrol and gas, both at minimum and when driving on the road.

During the driving test and whenever the operations on gas are not perfect, it is always possible to record the system parameters by saving an "acquisition" while driving.

Acquisitions



Main menu, **F2 -DISPLAY** Click on Acquisitions

Acquisitions			
Start saving	Ctrl+F5		
End saving	Ctrl+F6		
Display graph	Ctrl+F8		
	В	BI	

Now we are ready to start saving our acquisitions.

The purpose is to save the data of the system when the engine does not run properly, therefore click on **Start saving** and drive the car until you recorded the critical situation.



The word acquisition will be displayed with a green dot on a side while the system is saving all data.

Ctrl+F5	
Ctrl+F6	
Ctrl+F8	_
	Ctrl+F5 Ctrl+F6 Ctrl+F8

To stop saving the data, click on **Acquisitions** and **End saving**.



Type a name for the file and click on "Save".

To view the recorded graphic file, click on "Acquisitions / Display Graph, select the file to check then click "Open".

All graphic files will be saved in the folder C:/Programs/Tartarini/Sequential/Acquisitions.



The graph that will appear gives the chance to analyze many parameters at the same time. This file may be **sent per e-mail to our technical service** for our study. In case you send it, please make sure you **always send along also the configuration file**.

🔁 Sequenziale4_9C			
<u>Eile M</u> odifica <u>V</u> isualizza <u>P</u> referiti	Strumenti ?		-
🗘 Indietro 🔹 🔿 👻 🔂 📿 Cerca	🔓 Cartelle 🧭 🖺 🥵 🗙 🖄 🥅		
Indirizzo 🗀 C:\Programmi\Tartarini\Se	quenziale4_9C		💌 🤗 Vai
	Nome 🛆	Dimensione	Tipo
	Acquisition		Cartella di file
	ConfigCNG		Cartella di file
Sequenziale4_9C	ConfigLPG		Cartella di file
	🛄 Firmware		Cartella di file
Acquisition	🔊 Languages.dl	448 KB	Estensione dell'appli
Cartella di file	🔊 OnLineUpdate.dll	176 KB	Estensione dell'appli
Ultima modifica: 19/10/2005 11.26	DnLineUpdate	509 KB	Applicazione
	📶 SequenC	826 KB	Applicazione
Attributi: (normale)	🔊 SerAebDL.dli	719 KB	Estensione dell'appli
	•		Þ
Oggetti selezionati: 1		🖳 Risorse	e del computer

You may save the Configuration file from Main Menu F5-Save configuration.

All folders containing Acquisitions, Configuration files CNG, and Configuration files LPG are stored in C:/Programs/Tartarini/Sequential/

DIAGNOSIS



Select from main menu F3 - DIAGNOSIS.

ECU diagnosis - Config: GPL_TAR_4CIL			
Diagnosis		State	
¤ Reducer solenoid valve ■ Solenoid valve tank			
Time on GAS since last service (hours) Service every Number of starting attempts made on gas: <u>R</u> eset service mileage	00 : 00 350 hours 0	Reset errors	

If there are no errors in the ECU, this page will appear as the picture above. On the other hand if any error is detected, it will be displayed and the installer may delete it using the "**reset errors**" button after he solved the problem.

Service: Each time the system is serviced, the installer must reset the counter using the "reset service mileage" button.

Number of starting attempts made on gas: The system allows you to start the engine maximum **five times** directly using gas, exclusively in the case of emergency. This possibility is given just as safety to the driver in case car is out of petrol. All the service parameters will be stored in the ECU.

Solenoid valves:



It is possible to turn ON or OFF the diagnosis check on both solenoid valves.

Tartarini Sequential Fuel Injection 3-4 (File Connection Settings Help	:ylinder		
TARTARINI and industries 942 BOUIFMENT F1 > VEHICLE CONFIGURATION	Since 1941 always in progress		11/1/10/00
F2 » DISPLAY			
F3 » DIAGNOSIS	Seguential	inal la	lootion
F4 » AUTOCALIBRATION	Sequentuar	UGULU	ijecuoli
F5 » SAVE CONFIGURATION			
F6 » LOAD CONFIGURATION			
F7 » ECU REPROGRAMMING			
F8 » EXIT SOFTWARE	Sequentia		
	CHOSE ONE OPTION FF	ROM THE SIDE M	MENU
		3-	4 cylinder B
	Tartarini Auto via Bonazzi 43 - 40013 CastelMaggiore (B	o) Italy	_info@tartariniauto.it
ECU connected	Config: GPL_TAR_4CIL	Firmware versi	ion: 28.0 LPG

AUTOCALIBRATION

Select in main Menu F4 - AUTOCALIBRATION.

It must be done with hot engine and gas pressure properly adjusted in idle: 1 or 1,2 bar for LPG & 1,8 bar for CNG.

🔀 Automatic calibration - Config: GPL	_TAR_4CIL			
Revs 77 rpm	jas <u> 0,000</u> ms	etrol <u>]</u> , <u> </u>] ms	Diff.press. 	Man.press.
Lambda 1	Temp.reducer	Temp.ga		Petr
	Press return	n to start calib	ration	
		Exit		

Before pressing ENTER button on PC, check that all the signals are correct & legible: **Revs.** / **T.gas** / **T.petrol** / **Diff.Press** / **Man.Press** / **Lambda** / **Temp.Reducer**. / **Temp.Gas**

IMPORTANT: the system cannot calibrate if reducer's temperature is below 50°.

Before pressing ENTER make sure also that Switch is on PETROL mode and engine in IDLE & NEUTRAL GEAR.

It is very important not to accelerate during the auto-calibration procedure or not to do anything that is not directly requested by the system software.



WARNING!!! Every time a new auto-calibration is required, it is <u>VERY IMPORTANT to</u> start back from the basic ECU parameters (see page 42).

The system will request to let the engine in idle position with all electrical loads turned off. When ready press ENTER.

🚺 Automatic calibrati	ion - Config: GPL_TAR_4	:IL			
Revs 70 rl	pm	ms	etrol <u> </u>	Diff.press.	Man.press.
Lambda 1- 1 2	T V V	emp.reducer— C C	Temp	.gas 52 °C	Petr
	<u>Calibrat</u>	tion in pr	<u>ogress,</u>	<u>please w</u>	<u>ait</u>
			Exit		

Wait for the system to complete the self-learning phase.

🔀 Automatic calibrati	ion - Config: GPL_T	AR_4CIL				
Revs 7 r	7 pm	ns D,DD ms	T.petrol-	/ <i>2</i> ms	-Diff.press. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Man.press.
Lambda 1- 1 2	V	Temp.reduc	°C	Femp.g	as C ℃	Petr
<u>Stay</u>	<u>in idle</u>	<u>e and tu</u>	<u>rn ON</u>	lights	s, fans, de	efroster,
			<u>etc</u>	<u></u>		
		Pres	s Enter v	w <mark>hen re</mark> a	dy	
			Exi	it		

Leave the engine in idle and do not accelerate. Turn on every electrical load of the car (lights, fan, defroster...) and wait a few seconds before pressing ENTER. **WARNING:**

If any **intermittent load** such as **air conditioning-compressor or radiator-fan** turns on during the autocalibration, it is suggested to repeat the process from the beginning.



Wait for the system to complete the next self-learning phase.



Leave the engine in idle, do not accelerate, turn off every electrical load that was turned on previously, and wait a few seconds before pressing ENTER.

Automatic calibration - Config: GPL_EV0_4CIL	- 0 🗙
Nozzle sizing Too big Correct Too small	
CALIBRATING ENDED CORRECTLY.	
Note: the ECU is reset to initial conditions after battery connection.	
Exit	

Calibration completed successfully.

Check the sizing indicator of the nozzles.

The size of the nozzles is correct when the indicator is within the green bar.

SAVE CONFIGURATION



Select from main Menu **F5- SAVE CONFIGURATION.**

This menu is used to save the configuration parameters of the ECU in a file that can later be used to initialize other control units fitted in vehicles of the same or similar models. This file is a very important instrument of control also for our technical service if sent via email to our Company together with an acquisition file of the same vehicle.

🔀 Save configuration with name		
Files available - I PG	ſ	
	gpl tar 4cil	
	-File identification data	
	Car GPL_TAR_4CIL	
	Euro	
	Valves	0
	Cylinders	0
	Displacement (cc)	1600
	Power (kW)	0
	Engine	
	Control unit	
	Gearshift	
	Year	0
		I
		ancei

The information entered in the "File identification data" describe the vehicle on which the system is installed.

Before entering OK, choose the configuration of the vehicle: 3-4 cyl. / 5-6-8 cyl. or Turbo. Each option has its own folder with relative files saved.

🔁 Sequenziale4_9C							
<u>Eile M</u> odifica <u>V</u> isualizza <u>P</u> referiti	<u>S</u> trumenti <u>?</u>		10				
🗘 Indietro 🔹 🔿 👻 🔯 🥘 Cerca	a 🔁 Cartelle 🧭 🎦 🗳 🗙 🖄 🔠 🕶						
Indirizzo 🗋 C:\Programmi\Tartarini\Se	Ingirizzo 🗋 C:\Programmi\Tartarini\Sequenziale4_9C 💽 🤗 Vai						
	Nome 🛆	Dimensione	Tipo				
	California Acquisition		Cartella di file				
	ConfigCNG		Cartella di file				
Sequenziale4_9C			Cartella di file				
	Eirmware		Cartella di file				
2 elementi selezionati.	🔊 Languages.dll	448 KB	Estensione dell'appli				
	🔊 OnLineUpdate.dll	176 KB	Estensione dell'appli				
ConfigLPG	🍠 OnLineUpdate	509 KB	Applicazione				
ConfigCNG	🔏 SequenC	826 KB	Applicazione				
	N SerAebDL.dll	719 KB	Estensione dell'appli				
Oggetti selezionati: 2		🖳 Risors	e del computer 🛛 🎢				

Configuration files are saved into the folders Config LPG and Config CNG.

LOAD CONFIGURATION



If you wish to load a file saved previously, select **F6- LOAD CONFIGURATION**

Select the configuration to load in ECU Files available - LPG HONDA CIVIC 1.4 16V	
	File identification data Car HONDA CIVIC 1,4 16V Euro 0 Valves 0 Cylinders 0 Cylinders 0 Cylinders 0 Displacement (cc) 1400 Power (kW) 0 Engine 0 Control unit Gearshift 0 Year 0

This sub-page is used to load configurations saved previously for vehicles of the same model on which the system is being installed.

Choose configuration 3-4 cyl. / 5-6-8 cyl. / or turbo vehicle.

Select the required name of the vehicle (name of the file) and press ENTER. The file selected will be automatically loaded in the gas ECU.

ECU REPROGRAMMING



Select from main menu F7- ECU REPROGRAMMING

This menu is used for reprogramming the ECU.

Tartarini Auto develops continuously new & helpful software functions for the installers and ECU's may be reprogrammed (accordingly to its manufacturing series) with the latest Firmwares available for download on the customer's area of our website www.tartariniauto.it.

Tartarini Sequential Fuel Injection 3-4 File Connection Settings Help	cylinder			
TARTARINI Julio industrices GAS Equipment - Select	Since 1941			11111110
	Cerca in: 🗁 Firmware		* 💷 -	
F1 > VEHICLE CONFIGURATION	menti TAR345_#01000.ptr TAR345_#01010.ptr TAR345_#02200.ptr TAR345_#02200.ptr			
F3 » DIAGNOSIS	3 ktop			lection
F4 » AUTOCALIBRATION	>			Jeculon
F5 » SAVE CONFIGURATION	umenti			and the second
F6 » LOAD CONFIGURATION	se del			Injeut
F7 » ECU REPROGRAMMING				
F8 » EXIT SOFTWARE Risors	e di rete Nome file:		▼ Apri	
	Tipo file: 3-4 cy	linder programming files	✓ Annulla	
		CHOSE ONE OPTION FR	OM THE SIDE M	ENU
	Tartarini Auto		3-4	4 cylinder B
	via Bonazzi 43 - 4	0013 CastelMaggiore (B	o) Italy	info@tartariniauto.it
ECU connected	Config: GPL_TAR_4C		Firmware versio	on: 28.0 LPG

Once entered the ECU REPROGRAMMING menu, chose the desired Firmware to upload and click OPEN. The software will automatically reprogram the ECU.

WARNING: Never REPROGRAM ECU and never RESET ECU FROM BASE PARAMETERS while the vehicle is running on gas.



Please perform also the following procedure in order to benefit of all advantages of new Firmwares uploaded on ECU:

Click on "**Configuration** / **Reset ECU from base parameters**": this will restore the original settings of the ECU.

Now you will have to set again one by one all the parameters of the CONFIGURATION MENU.

Please remember that all the **yellow color settings** of the CONFIGURATION MENU must be entered with **dashboard-KEY OFF.**

TROUBLESHOOTING:

After 10 seconds from engine start, the switch lights go off: There is no Revolution signal.

> The engine jerks in idle, as some cylinder doesn't work.

The cut-off injector wiring is not properly installed.

Verify that letter "A" of the RAIL injector corresponds to the BLUE and BLUE/BLACK wire of the cut-off injector wiring.

Once the non-functioning injector has been found, ensure that:

1) Rubber gas hose is not obstructed/ choked or is not leaking.

2) Fitting on the intake manifold is not obstructed.

3) Rail-nozzle fitted on the injector unit has the same diameter as the other ones.

4) Gas ECU sends the correct signal to that injector

5) Controlling wires of the gas injectors are not damaged or disconnected from the connector of the gas ECU or the connector of the injector unit.

> When switched to gas, the system automatically returns to petrol:

- 1) The gas injection times are too high.
- 2) Check the gas-phase filter if occluded.
- 3) The injection pressure is too low.
- 4) The Revolution Signal is not correct.

In case 2) and 3) the switch "beeps" in order to advise that the pressure is too low.

> If the warning "non compatible injector" occurs, verify the following:

PC connection cable was accidentally disconnected while the software was operating.

Exit the software, connect firmly the two cable-ends and open the software again.

The number of RPM displayed on PC does not correspond to the real RPM of the vehicle:

- 1) Check the correct selection on software of <u>ignition type</u> (one coil, two coils, rpm sensor, rpm sensor 2)
- 2) Check the correct selection on software of <u>type of revolution signal</u> (standard, weak).

Every time the user changes one of these settings in software, he must make sure to turn the dashboard key-off and wait until the light on the gas-switch is OFF before turning key back on. If you don't proceed this way, the ECU will not store the new selected data.

> By Switching to gas the engine turns off:

- 1) Verify if there's any gas in the tank.
- 2) Verify that gas reaches the injector rail.
- 3) Verify that 12v power dashboard-key is present.

In case 1) and 2) the switch "beeps" in order to advise that the pressure is too low.

Check engine light turns ON:

1) Check what exact error the original car electronic unit gives. Each error has an international code number and a description.

- Check the gasoline fast and slow trimmers through the OBD plug and verify that they did not slide all the way to the end of the scale. In case they did: do the necessary adjustments while the car is running on gas, in order to bring them back to "0" position or at the original position they were when running on petrol.
- 3) Check the proper functioning of the Lambda sensor.
- 4) If it was installed also a Timing Advance Processor, try to disconnect it.

> It is not possible to connect to gas ECU:

Turn dashboard-key ON, attempt connection even if faulty and reprogram ECU with a new Firmware version. When the new firmware is loaded, disconnect and connect back again.