



complete LPG/CNG systems

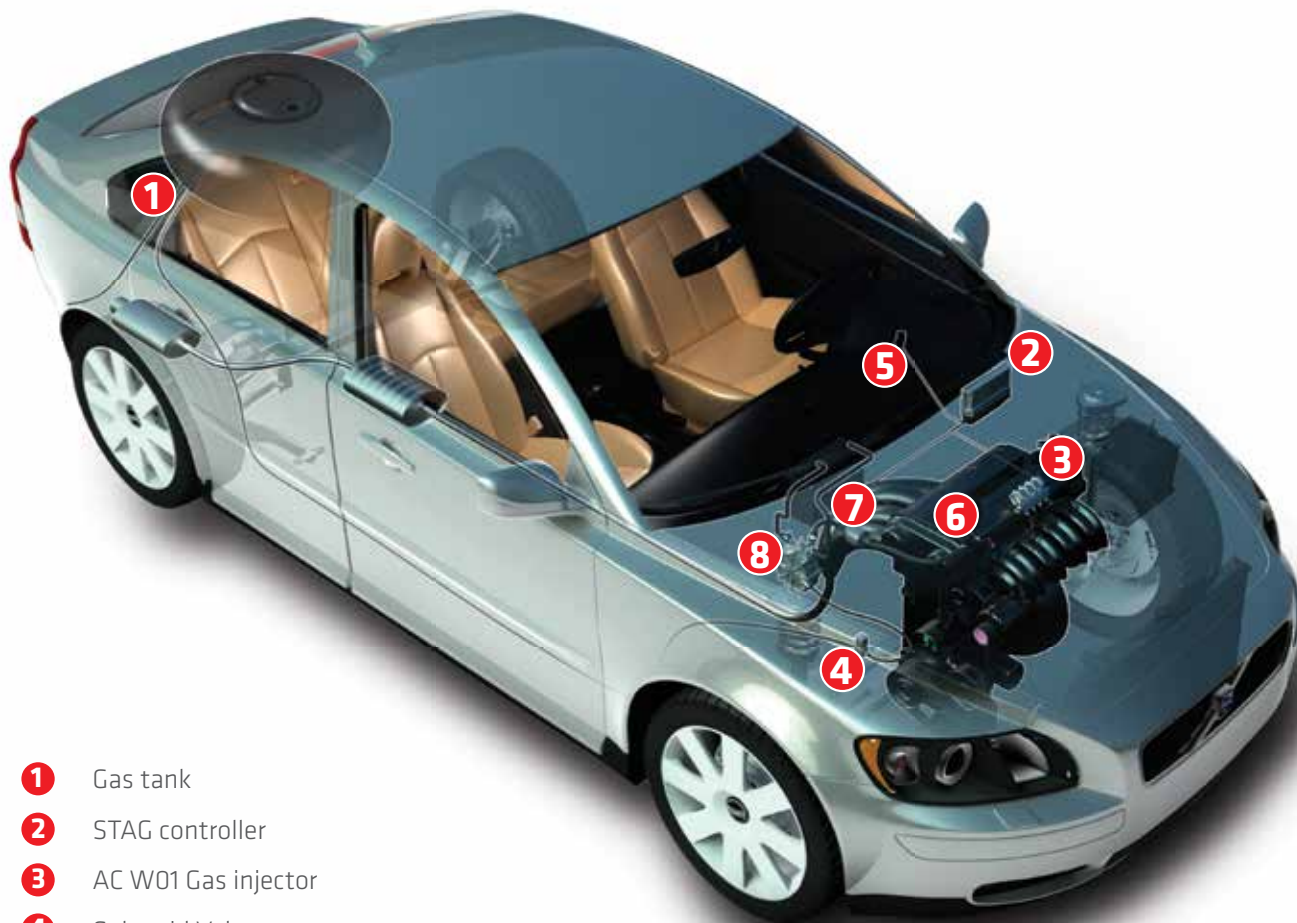
Table of Contents

View of the LPG system	p. 4
Choice of controllers	p. 5
Comparison of controllers	p. 6-7
STAG 400 DPI controller	p. 8
Electronics - Controllers - Sequential Gas Injection Systems	p. 9
Electronics - Controllers - Mixer Gas Injection Systems	p. 10
Electronics - Emulators	p. 11-12
Electronics - Changeover Switches, Time Advance Processors	p. 13
Mechanics - Injector Rails, Reducers	p. 14
Workshop Equipment - Interfaces, Scanners, Data Recorders	p. 15
Other Components	p. 16
Minikit	p. 17
Contact	p. 18

AC S.A. reserves the right to introduce changes to the presented information. All information is current as of the date of print.

As provided by the program of continuous improvement at AC S.A., the information is subject to modification without notice.

View of the LPG system



- 1 Gas tank
- 2 STAG controller
- 3 AC W01 Gas injector
- 4 Solenoid Valve
- 5 LED-300/400 B changeover switch
- 6 PS O2 pressure sensor
- 7 Gas filter
- 8 ACR01 Reducer

CHOICE OF CONTROLLERS

Model Year	Cylinders	STAG-200-4	STAG-4 plus	STAG-300-4 ISA2	STAG-300-6 ISA2	STAG-300-8 ISA2	STAG-300-4 premium	STAG-300-6 premium	STAG-300-8 premium	STAG 400.4 DPI
1990 and older	3	●	●	○	○	○	-	-	-	-
	4	●	●	○	○	○	-	-	-	-
	5	-	-	-	○	○	-	-	-	-
	6	-	-	-	○	○	-	-	-	-
	8	-	-	-	-	○	-	-	-	-
1991 -2002	3	○	●	●	○	○	-	-	-	-
	4	○	●	●	○	○	-	-	-	-
	5	-	-	-	●	○	-	-	-	-
	6	-	-	-	●	○	-	-	-	-
	8	-	-	-	-	●	-	-	-	-
2003 and newer	3	-	○	○	○	○	●	○	○	-
	4	-	○	○	○	○	●	○	○	-
	5	-	-	-	○	○	-	●	○	-
	6	-	-	-	○	○	-	●	○	-
	8	-	-	-	-	○	-	-	●	-
2004 and newer*	4	-	-	-	-	-	-	-	-	●

- Recommended
- Applies

*Dedicated for vehicles equipped with direct petrol injection engines from the VW - and Mazda Group
List of supported DPI engine codes available from: www.ac.com.pl

COMPARISON OF CONTROLLERS

	STAG-200	STAG-4 plus	STAG-300 ISA2	STAG-300 premium	
design	Aluminum, water - resistant housing	-	●	●	
	Built-in sequential petrol injector emulator	●	●	●	
functional features	High-precision gas dosing based on engine's RPM	●	●	●	
	Maintaining key engine performance parameters: HP, torque, RPM on exactly the same level as in the case of petrol injection	●	●	●	
	Auto-adjustment of gas temperature and pressure	●	●	●	
	Aligning the mixture ratio to current adjustments of the petrol injection controller	-	-	-	●
	Additional manual adjustment of working parameters depending on the temperature of the injected gas	-	●	●	●
	Option to heat up gas injectors	-	●	●	●
	Automatic changeover to petrol on empty tank	●	●	●	●
	Automatic changeover to gas	●	●	●	●
	Reading ECU adjustments	-	-	-	●
	Controller can be used for LPG or CNG	●	●	●	●
	Gas system inspection reminder	●	●	●	●
	Smart Self-Adaptation System ISA2 (Self-Adaptation based on petrol injection time)	-	-	●	-
installation and calibration	Intuitive controller calibration	●	●	●	
	Precise view of working parameters on the oscilloscope	●	●	●	
	Aligning the mixture ratio based on information on petrol injection times	●	●	●	
	Communication with every OBD II and EOBD system (not only CAN)	-	-	-	●

COMPARISON OF CONTROLLERS

	STAG-200	STAG-4 plus	STAG-300 ISA2	STAG-300 premium	
Installation and calibration	Fixed connection with the car's OBD, with no impact on the OBD system operation, allowing for connection of testing and diagnostic equipment, etc.	-	-	-	●
	Working parameters can be adjusted manually	●	●	●	●
software features	Additional 3D graphical map	-	●	●	●
	New CNG propulsion algorithms	●	●	●	●
	Separate injector adaptation into BANK 1 and BANK 2	-	-	-	●
	Engine's RPM signal filters	●	●	●	●
	Compliance with various types of injection controllers (sequential, semi-sequential, full group)	●	●	●	●
	Setting maximum engine overload for gas propulsion	-	●	●	●
	Standard and turbocharged engine types	●	●	●	●
	Mazda™ Leaning option	-	●	●	●
	Postinjection cut-off threshold adjustment	-	●	●	●
	Smart Self-Adaptation System ISA2 (on-going monitoring of STFT and LTFT adjustment)	-	-	-	●
	Improved interoperation with petrol propulsion systems: full group and semisequential systems	-	●	●	●
	New feature "Injection Controller Type" - allows for fitting injectors, e.g. Valtek 3 Ohm into full-group controller engines	-	●	●	●
	Fuel and Gas 3D map	-	-	●	●
Warranty	3 years*	3 years*	3 years*	3 years*	

* from the date of manufacture and 2 years from the date of installation

● available
- not available

STAG 400 DPI CONTROLLER

STAG 400 DPI

STAG 400 DPI first and only controller on the market guaranteeing precise gas injection for direct petrol injection engines



design	Aluminum, water-resistant housing	●
	Built-in advanced petrol injector emulator	●
functional features	Precise gas injection within full RPM range and optimized gas dosing	●
	Maintainig key engine performance parameters:HP, toporque, RPM on exactly the same level as in the case of petrol injection	●
	Automatic gas level indicator	●
	Automatic changeover to petrol on empty tank	●
	Automatic changeover to gas	●
	LPG ignition	●
installation and calibration	Gas system inspection reminder	●
	Intuitive controller calibration	●
	Precise view of working parameters on the oscilloscope	●
	Aligning the mixture ratio based on information on petrol injection times	●
	Communication with every OBD II and EOBD system	●
	Fixed connection with the car's OBD, with no impact on the OBD system operation, allowing for connection of testing and diagnostic equipment, etc.	●
	Working parameters can be adjusted manually	●
software features	3D graphical map	●
	Engine's RPM signal filters	●
	Setting maximum engine overload for gas propulsion	●
	Standard and turbocharged engine types	●

● available

SEQUENTIAL GAS INJECTION SYSTEMS

STAG-4 Q-BOX BASIC



The Sequential gas injection system STAG 4 QBOX BASIC, is the first of the family of new-generation controllers, produced by AC SA. It is designed for 4-cylinder engine cars, with sequential gasoline injection. The device is based on a modern highly productive 32-bits microprocessor, what enables very precisely control the gas dosification, prompt response on changing work conditions of the engine, as well as quicker measurement of gasoline injections times .

STAG-300 premium



STAG-300 premium is a new generation controller equipped with Smart Self-Adaptation System ISA. System constantly monitors short and long term STFT and LTFT corrections. STAG-300 Premium easily communicates with every OBD II and EOBD auto systems (not only CAN) by the STAG-OBD ADAPTER which aside from standard parameters enables the read out of your vehicle's ECU corrections.

STAG-300 ISA2



Sterownik STAG-300 ISA2 posiada Inteligentny System Autoadaptacji drugiej generacji - ISA2. Głównym zadaniem Systemu ISA2 jest ciągłe, automatyczne modyfikowanie mapy gazowej w funkcji obrotów silnika na podstawie wzorcowej mapy benzynowej.

STAG-4 plus



Miniaturized microprocessor sequential gas injection controller STAG-4 plus is fitted with software and contains an additional 3D graphical map which allows the precise control of gas injection depending on the rotational speed of the engine.

STAG-200



Microprocessor based gas injection controller. The device controls gas injection on the basis of sequential or non-sequential petrol injection

MIXER GAS INJECTION SYSTEMS

STAG-150



Microprocessor based stepper motor controller (actuator). It controls gas dose with respect to lambda probe readings.

Features:

- internal emulator of four petrol injectors with the option of changing the effective resistance 100/50 Ω .
- control panel with gas level indicator
- parameters adjusted by computer

STAG-100



Microprocessor based stepper motor controller (actuator). It controls gas dose with respect to lambda probe readings.

Features:

- single point internal emulator
- control panel with gas level indicator
- parameters adjusted by computer.

STAG-50



Microprocessor based stepper motor controller (actuator). It controls gas dose with respect to lambda probe readings.

Features:

- control panel with gas level indicator
- parameters adjusted by computer.

STAG-XL



Microprocessor based stepper motor controller. It controls gas dose with respect to lambda probe readings as well as throttle position sensor and simulates lambda probe. Parameters adjusted by switches\computer.

STAG-L plus



Microprocessor stepper motor controller controls the gas flow on the basis of lambda probe and TPS indications. Simple configuration by means of switches.

STAG-E1-2

Universal emulator of 1 or 2 petrol injectors. If the device emulates single petrol injector, emulation resistance may be set to 100/50/33/25 Ω. If the device emulates two petrol injectors, emulation resistance may be set to 100/50 Ω.

STAG2-E6

Emulator for 6 cylinder engines with multipoint fuel injection and internal resistance of 100 Ω.

STAG2-E4

Emulator for 4 cylinder engines with multipoint fuel injection and internal resistance of 100 Ω.

STAG-EU4

Range of universal emulators for 4 cylinder engines with multi-point fuel injection. Adjustable effective resistance of emulation 100/50/33 Ω.

FPE-V

Fuel Pressure Emulator FPE dedicated for Volvo vehicles. While powered by gas there is a lack of fuel intake from petrol rail and the petrol pressure rises above the base value. Because of that petrol ECU shortens injection timing and/or reports an error.

FPE-GM

Fuel Pressure Emulator (variable pressure) to eliminate the error report in vehicles equipped with the pressure sensor at the petrol injection rail. The emulator is designed to cooperate with LPG controllers of the STAG-300 family.

FPE

Fuel Pressure Emulator FPE duplicates the correct petrol pressure in vehicles powered by LPG or CNG. FPE type EMULATOR should be used to avoid the error report. FPE EMULATOR is necessary in following types of vehicles: Ford: Escape 3.0 V6, 2007 Explorer, 2004 F150, Jaguar X-Type 2.5 V6 24v Multipoint '02 XB (OBD), Jaguar 2.5l and 3.0l, Mustang 4.0, Volvo 5cyl. 2.4l. Fuel Pressure Emulator FPE is also compatible with other types of vehicles, not mentioned above, with fuel pressure sensor in petrol rail (mostly Ford group engines).

FLE-P

FLE-P type EMULATOR restores the correct fuel level readout in vehicles powered by LPG/CNG which are equipped with on-board computer ECU.

FLE-FC

The emulator of fuel level type FLE-FC is designed for vehicles (mainly by French manufacturers) equipped with float switch resistance rated 0 - 600Ω.

ELECTRONICS

CHANGEOVER SWITCHES

SEQUENTIAL GAS INJECTION SYSTEMS

LED 300



Changeover switch LED 300 with LPG level gauge indicating operating mode. External buzzer produce sound and acoustic effects.

LED 400



Basic features

- suitable for vertical and horizontal orientation.
- AC dual color LED with LPG level gauge and operating mode indicator
- light intensity control (LED-400)
- integrated buzzer
- buzzer volume control (LED-400)

MIXER GAS INJECTION SYSTEMS

STAG2-G



Control panel - automatic changeover switch for carburetor engines.

STAG2-W



Control panel - automatic changeover switch for fuel injection engines.

ELECTRONICS

Time Advance Processors

TAP-01



Timing Advance Processor TAP-01 is a microprocessor device used in petrol engine vehicles converted to LPG or CNG. It is designed for vehicles equipped with the Inductive Crankshaft Sensor.

TAP-02



Timing Advance Processor TAP-02 is a microprocessor device used in petrol engine vehicles converted to LPG or CNG. It is designed for vehicles equipped with Digital Crankshaft Sensor.

MECHANICS

INJECTOR RAILS

AC W01



AC injector rail is designed for autogas sequential injection systems in cars with internal combustion engines. It ensures the precise dosages of vaporized gas to the engine inlet and each cylinder. AC W01 injector rail is designed for engines with horse power up to 40 hp/cyl.

AC W01 BFC



AC injector rail is designed for autogas sequential injection systems in cars with internal combustion engines. It ensures the precise dosages of vaporized gas to the engine inlet and each cylinder. AC W01 BFC injector rail is designed for engines with horse power up to 55 hp/cyl.

MECHANICS

REDUCERS

R01 type 150



AC reducer is designed for autogas vapor phase sequential injection systems and ensures continuous stable pressure while supplying the precise fuel dosage to the gas injectors. AC type 150 reducer can be easily fitted in all cars with engines of up to 150 hp.

R01 type 250



AC reducer is designed for autogas vapor phase sequential injection systems and ensures continuous stable pressure while supplying the precise fuel dosage to the gas injectors. AC type 250 reducer can be easily fitted in all cars with engines of up to 250 hp, particularly turbocharged.

WORKSHOP EQUIPMENT

BLUETOOTH



BLUETOOTH interface allows wireless communications between STAG controllers and PC computer equipped with BLUETOOTH module.

INTERFACES

USB



USB interface enables communication between STAG controllers and PC computer via USB port.

RS 232



RS 232 interface enables communication between STAG controllers and PC computer via COM serial port.

Adapter STAG-50



Control panel - automatic changeover switch for engines with single-point fuel injection.

WORKSHOP EQUIPMENT

SCANNERS

SXC 1011



SXC 1011 Diagnostic Code Scanner is a reliable diagnostic tool for EOBD and OBD II recommended for every LPG/CNG installation workshop.

WORKSHOP EQUIPMENT

DATA RECORDERS

Data recorder



Data Recorder constantly registers parameters from the engine and it is an irreplaceable tool in detecting flaws and errors.

OTHER COMPONENTS

WPG-2 WPG-4



WPG-2 (90 Ω increasing).
WPG-4 (50 k Ω decreasing).

GAS LEVEL INDICATORS

WPGH-1



Non-contact (Hall sensor) gas level indicator with a linear voltage output.

OTHER COMPONENTS

STAG-300 ISA2/ / STAG-4 plus



Controller connection adapter allows switch from STAG-300 ISA2 to STAG-4 plus controller without changing the whole wire set.

CONTROLLER CONNECTION

STAG-4 plus/ /STAG-300 ISA2



Controller connection adapter allows switch from STAG-4 plus to STAG-300 ISA2 controller without changing the whole wire set..

OTHER COMPONENTS

OBD adapter wireset



It enables quick integration of STAG-300 premium controller with diagnostic interface OBDII/EOBD.

WIRESSETS

MINIKIT

In order to provide our end customers with products which meet all their expectations regarding quality and operation, we have created MINIKIT AC.

MINIKIT AC is a LPG kit including STAG-300ISAII or STAG-4 plus controller with wire set and accessories (pressure sensor, two temperature sensors, petrol/LPG switch, LPG level indicator, buzzer, software, and cable ties), reducer, injection rail and gaseous phase filter.

In our kits, only those components which have been tested for reliability and appropriate configuration have been used. As the result of our efforts, we offer a few dozen of MINIKITS AC for 3, 4, 5, 6 and 8-cylinder engines. When selecting MINIKIT, please make sure that the reducer matches the engine power (sometimes it is necessary to use two reducers).

Currently, in our MINIKITS we use components of the following manufacturers:



- Injector rails: AC W01
AC W01 BFC
VALTEK typ 34
VALTEK typ 30
RAIL IG1/ AC
MAGIC JET
OMVL REG FAST
HANA
- Reducers: AC-R01 150 (for engines with power up to 150 hp)
AC R01 250 (for engines with power up to 250 hp)
TOMASETTO ALASKA (for engines with power up to 90 hp)
ZAVOLI ZETA/N (for engines with power up to 150 hp)
KOLTEC VG 392 (for engines with power up to 200 hp)

CONTACT

AC Spółka Akcyjna

ul. 42 Pułku Piechoty 50, 15-181 Białystok, Poland

tel. secretary +48 85 743 81 00

fax secretary +48 85 653 93 83

e-mail: info@ac.com.pl

www.ac.com.pl

Trade Department - Autogas Export Selling

tel. +48 85 743 81 48

tel. +48 85 743 81 58

tel. +48 85 743 81 68

tel. +48 85 743 81 69

tel. +48 85 743 81 76

fax +48 85 653 86 49

Trade Department - Automotive Parts & Accessories

tel. +48 85 743 81 11

tel. +48 85 743 81 46

fax +48 85 653 86 49



NEW!

**STAG
DIESEL**

COMING SOON!

LPG/CNG system for DIESEL engines

