BREVETTATO SELF-ENERGY Gruppo di Mantenimento Energia Elettrica 12V.

EG20 / EG25

By

elettromeccanica GASPERINI S.R.L.

Via Guido Rossa, 2/2 40055 Villanova di Castenaso Bologna ITALIA
International Customers : Tel: +39 051 5947602 e-mail: export-ksye@egasperini.it www.egasperini.com

Lpg Gas Generators & Innovative Devices

• The "key" points for the **assembling technician** are indicated by using the symbol → • Fill in the warranty form • Handbook to deliver to the user client	
• The installation procedure for model **EG20** and model **EG25** is the same.	
• The "key" points for the **User Client** are indicated by using the symbol →	
For an optimal performance of the SELF-ENERGY EG20 / EG25, we suggest to use service batteries with > = 160 ÷ 250 Ah overall capacity. (for ex. 2 parallel batteries of 100 Ah)	

The present handbook describes the conditions of security installation use and maintenance of the **"12V Electric Energy Supplying group SELF-ENERGY EG20 / EG25"** ***Evolution***
"then calling generator"

Read this handbook before starting the installation use and maintenance.

INDEX

0.	Page 1,2
1.	Security

For the assembling technician	☞

2.	Packaging content
3.	Handling the EG20 / EG25 ***Evolution***
4.	List of security and identification labels
5.	Preliminary controls
6.	Identification components
7.	Installation – connection - scheme
8.	Test

For the user client	☜

9.	Generator use
10.	Suggestions for a right use
11.	Maintenance
12.	Damage's research
13.	Transport
14.	Elimination
15.	Technical Features and "CE Accordance Declaration"
	Warranty

1 Security

The EG20 / EG25 generator is secure and trustful in all its phases of work (transport, installation, use and maintenance) on condition that the instructions given by this hand-book are respected.
It is obligatory to know and understand the hand-book's content before proceeding to one (just the first) phase of work.
On the contrary, personal lesions, damages to the generator EG20 / EG25, to the connected uses or to the vehicle on which it has been installed, may occur.
The electric generator EG20 / EG25 has been planned and made for the installation and use on motor homes.
(just for entertainment use).

- Anomalous working or anomalous noise

In presence of anomalous working or anomalous noise deactivate the generator and please contact Elettromeccanica Gasperini s.r.l. or the authorized assistance's workshops.

- The engine exhaust gas are toxic

The exhaust gas have always to pipe outwards .
Do not run the generator in closed environments.
When the motor home lies in closed environments, as garages, ferry-boat holds etc., make sure that the generator doesn't work (electrical switch on module command remote in position "0" or "OFF", knife-switch EG20 / EG25 open and gas tap EG20 / EG25 closed)

- Cooling air and exhaust gas

EG20 / EG25's hot air exit holes (EG20 / EG25's cooling) and exhaust gas MUST NOT be obstructed or piped inside the motor home. Exhaust gas and cooling air must not penetrate into inhabited areas of the motor home.

- Cooling fan

Attention!! Open the electric knife-switch before removing the service cover.
By removing the service cover we will find the cooling fan which can start running.

- Installation

The generator has to be installed **outside** and, in any case, in open and ventilated environment.
Never install the generator in domestic environments (such as cellars, garages, or closed spaces of every kind).
The **ground's distance** of the installed generator must guarantee security also during the reverse and during the way through rambling roads, bumps and ramps!
Do not make electrical connections between EG20 / EG25 and the 12V service wiring which are different from those shown in this hand-book .
On the contrary, damages to the electric generator EG20 / EG25, to the connected uses or to the wiring of the vehicle on which it has been installed, may occur.
The EG20 / EG25 generator is supplied with **LPG gas pressure 30 mbar** (±2**).**A pressure reducer (30mBar) must always be inserted (the motor home is normally equipped with it) between the LPG tank and EG20 / EG25. Never connect the EG20 / EG25 directly to the LPG tank.

- LPG Gas is toxic, inflammable and explosive

Do not use fire next to the LPG tank or EG20 / EG25 generator. Do not smoke, do not generate sparks or use fire during the installation or the LPG supplying. Always supply LPG in open spaces.

2 Packaging content

2.1	Photo n° 1	code 932.000.E

"12V Supplying Group of Electric Energy"
SELF-ENERGY EG20 / EG25" ***Evolution***

2.2	Photo n° 2	code 931.075

Module Command remote with acoustic and visible signalling

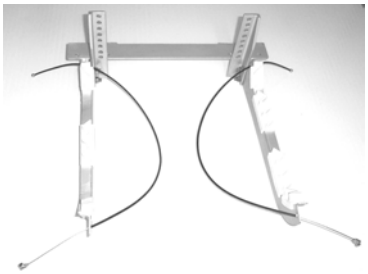
code 931.075

2.3	Photo n° 3	code 931.059/5

Signals cable (with connectors) for the connection of the EG20 / EG25 gear case.

2.4	Photo n° 4	code 932.186	Photo n° 4/a	code 932.202

Gear case (adapted for the Module Command remote) with the control software.

2.5	Photo n° 5	code 932.067		
Support frame cod. 932.067 for assembling to the motor home, equipped of two steel cables.				

3 HANDLING THE EG20 / EG25

3.1	Photo n° 6
Handle the EG20 / EG25 always in horizontal position. (see photo)	

4 List of security and identification labels

4.1

- Label product identification
- Label that shows the guaranteed acoustic power level LWA, according to the directives 2000/14/CE
- Exit Label "exhaust gas".
- Label "fan warning".

5 Preliminary controls

- Verify that each element listed above and its integrity is present in the packaging.
- Start the installation just if everything is regular, on the contrary, please contact Elettromeccanica Gasperini

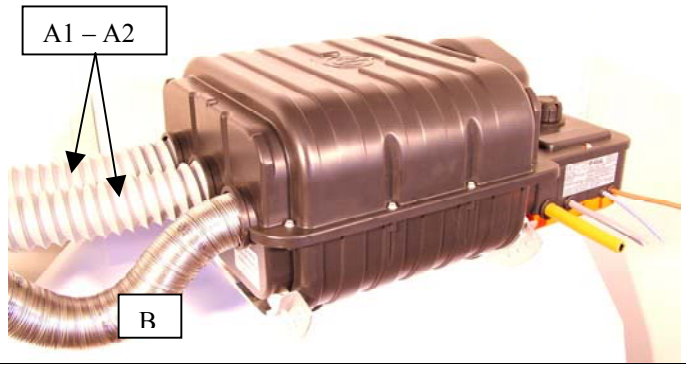
6 Components identification

6.1

Photo n° 7

A1 and A2 = Hot air (produced by the EG20 / EG25 while running) to pipe outwards the motor home.

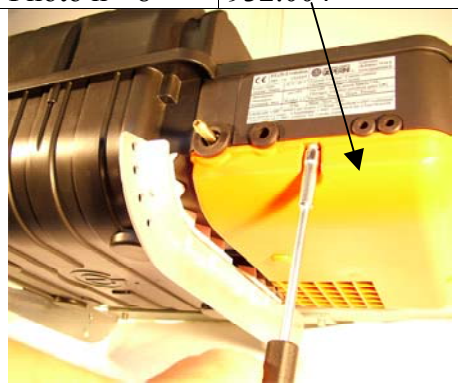
B = Exhaust gas ground piped or roof piped



6.2

Photo n° 8 932.004

Service cover (932.004)



6.3

Photo n° 9 SER2300/07

Oil tank stopper

6.4	Photo n° 13	code 931.042

Cooling fan.

Attention:
It can set on suddenly !

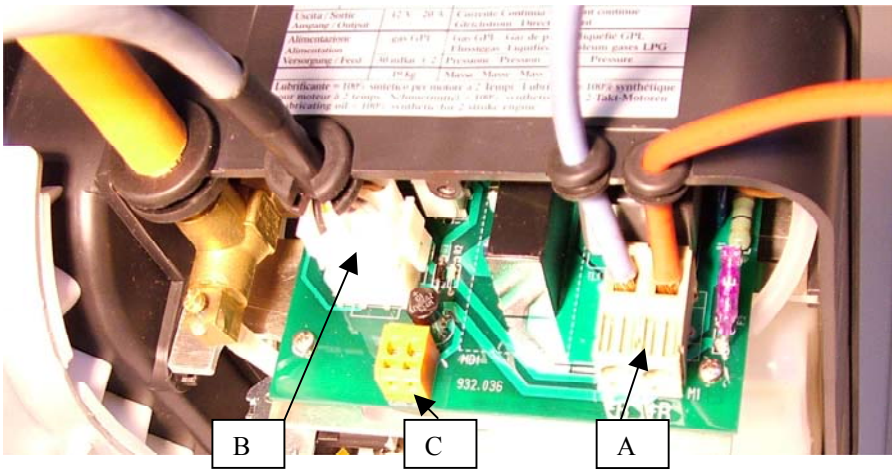
6.5	Photo n° 11	code 932.053

Service schedule

Terminal board (A) to connect battery

CN1 connector (B) for signal cable

M3 Terminal board (C) to activate “security blockage”



6.6	Photo n° 12	

Cooling holes

6.7	Photo n° 13	code 931.075		

"Module Command remote" to drive electric gear case

code 931.075

Note:
The EG20 / EG25's working time depends on

Level of the battery; its working time oscillates from few seconds to more minutes

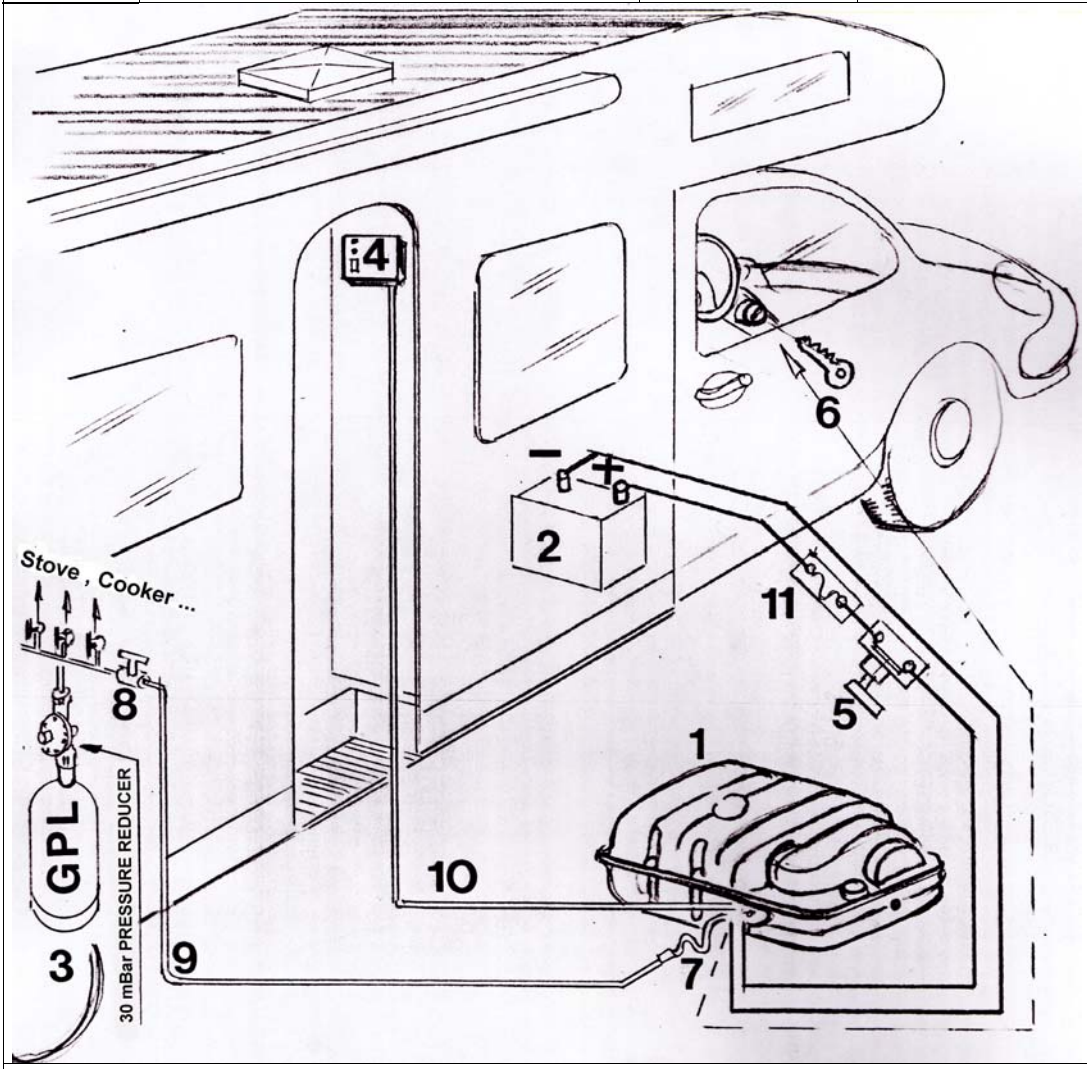
Button for manual starting (Automatic turning off)

Switch turn ON / turn OFF EG20 / EG25

7	**Installation and connection schemes (installation made by specialized workshops)**		

It is compulsory to read all the sections of this hand-book before proceeding to the installation of the generator.
The installation of "12V Supplying Group electrical energy SELF-ENERGY EG20 / EG25"(for motor homes) has to be made by **qualified technicians** who have specific knowledge in the motor homes field, in particular: auto body, system electrical worker and system Gas.

7.01	Photo n° 14			



Legend :

(1) Self Energy EG20 / EG25 - (2) Service Battery - (3) LPG Gas's tank with pressure reducer (**30mBar**) - (4) Electric gear case - (5) Knife-switch (on positive cable) - (6) Connection to activate "security Switch-off" by using the connection +D or SC - (7) Flexible homologated tube (to use with gas LPG gas) - (8) Tap for LPG gas's supplying - (9) Rigid gas tube Ø 8mm-
(10) Multiple cable for the connection between EG20 / EG25 and electronic gear case (in equipment)
(11) Fuse 80A

7.1	**Before starting with the EG20 / EG25's installation** (Checks and preliminary valuations)		

The EG20 / EG25's installation requests the assembly of the generator under the vehicle's ground (however in an isolated area from the inside of the motor home).
Before starting with the installation, make sure that the vehicle's constructer admits the assembling of the EG20 / EG25.
The fixing point must guarantee a traction force not inferior to **110 Kg.**

Note: EG20 / EG25 has to be installed in horizontal position !

7.1.1				
Positioning choice and checking free needed area for EG20 / EG25 installation. 	**1) Decide EG20 / EG25 positioning according to the following criteria:** • **Minimum requested space:** 700x400x280 mm. • **Minimum ground distance:** It has to guarantee security also during the reverse and during the way through rambling roads, bumps and ramps! • **Warmth source distance** (silencer) At least 20 cm from the catalyst At least 10 cm from silencer's terminal part. • **Air grating** It must not be directed towards: motor home's exhaust gas / water and mud splashes from motor home's wheels • Please avoid that the EG20 / EG25 is directly hit by the water or sand jet from a wheel or by the engine exhaust gases; It could be useful to fit a mudguard or another kind of protection, e.g. a rubber bar.			

7.1.2				
To agree with the user client	To estimate with the user client as follows: • **Hot air** piping modality: to use just for external use !(See also the specific section on this handbook) • EG20 / EG25's **exhaust gas** piping modality : Ground piped (back side of the motor home !?)) or roof piped (suggested because the smell of exhaust gas is less felt) • **Oil topping up:** To estimate the user client's necessities The oil topping up is requested each 100 working hours.			
	• **Installation inside a motor home van's storage locker:** Execute a hole of about 14 cm of diameter to allow air entrance both for EG20 / EG25's cooling and for security. The storage locker must be hermetic towards the living areas!!			
	Hot air (taken from EG20 / EG25's cooling) and exhaust gas tubes must be piped outside of the motor home van !!			

7.2	Installation needed components		

7.2.1			
M8 screws with their self locking nuts, both of them made of Stainless steel Or: Steel tubular Rivet (M8).	To use for the **fixing support** code 932.067 to the motor home's frame. Note: To value the most suitable fixing system.		

7.2.2			
Unipolar **80 A Knife-switch**	In case of failure or because of specific necessities, it gives us the possibility **to separate the EG20 / EG25 from the electric plant of the motor home.**		

7.2.3			
80 A fast (or Automotive) Fuse and its housing fuse .	Necessary for **plant's protection** between the battery of service and the EG20 / EG25 .		

7.2.4			
Red and Blue of 10 or 16mm² **unipolar electric cable** able to resist until a temperature of 90° C. Anti-Flame	For the connection between the **battery of service** and the EG20 / EG25. To choose the most suitable section, see the specific paragraph.		

7.2.5			
1 mm² unipolar electric cable able to resist until a temperature of 90° C **.** Anti - Flame	For the connection of the **"Security switch-off"**		

7.2.6	Photo n° 15		
Exhaust gas's 50mm Ø int. flexible steel (or Aluminium) tube			

7.2.7	Photo n° 16	code 931P2GEN	
Self-extinguished 57mm Ø int. PVC flexible corrugated tube able to resist until a temperature of 90 °C . This tube is used to pipe hot air (*) produced by the EG20 / EG25 during its working. (*)= Taken from the EG20 / EG25's cooling air engine.			

7.2.8	Photo n° 17
Flexible tube, LPG gas homologated (check norms for your country, for example CIG or IMQ in Italy)	

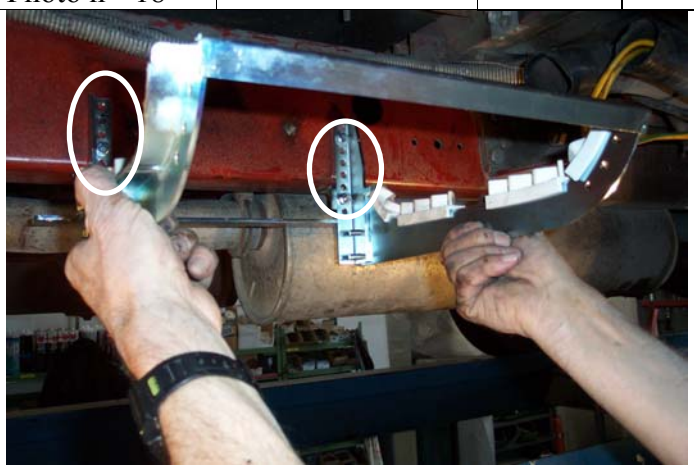
7.2.9
Ø 8 mm Copper or iron **tube** for **gas** plant.

7.2.10
LPG Gas **tap**

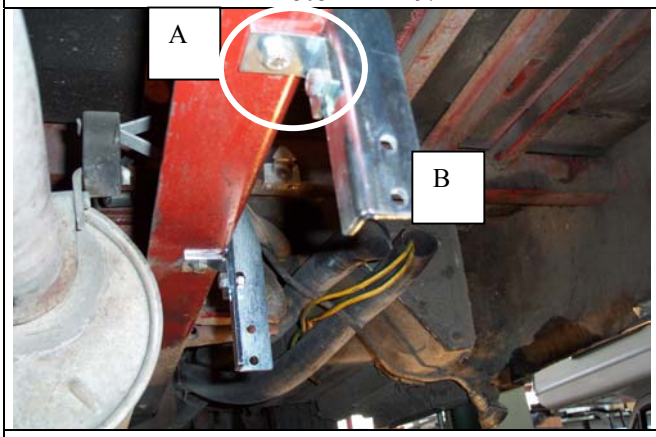
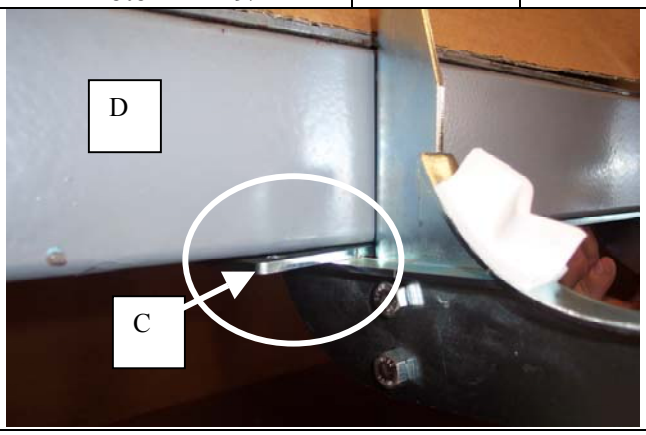
7.2.11
Steel adjustable **wrapper** used for : - exhaust gas tube (Ø 50 mm) - LPG flexible tube

7.2.12
Sheath for electrical plant.

7.3	Generator's **mechanical installation**

7.3.1	Photo n° 18
Mark on the side frame **the** fixing **holes** (*) you want to use. Where possible, use the holes already existing Note: (*) Possible added holes must be made just by following the vehicle's manufacturer directives.	

7.3.2

Photo n° 19/1	Photo n° 19/2
	
Execute the final **fixing** of the two **vertical rod** (B) and of the two **squares** (A).	The squares installation (B) is superfluous if the C point is in contact with the side frame (D) In this case (C) has to be fixed to the side frame (D) by using self locking screw and nuts

Lock the self-locking screws. **The used fixing system must forbid slackening or unscrewing!**

Note: Use self locking nuts .

7.3.3

Place **EG20 / EG25** on the **support** frame

code 932.067

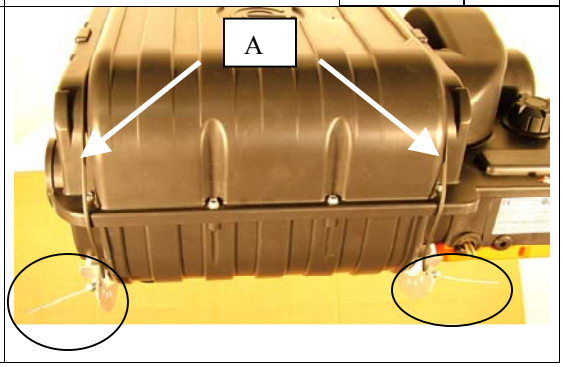
Photo n° 20

7.3.4

Fix the two steel cords (A) with the ends towards the outside

Photo n° 21/1

Photo n° 21/2



7.3.5

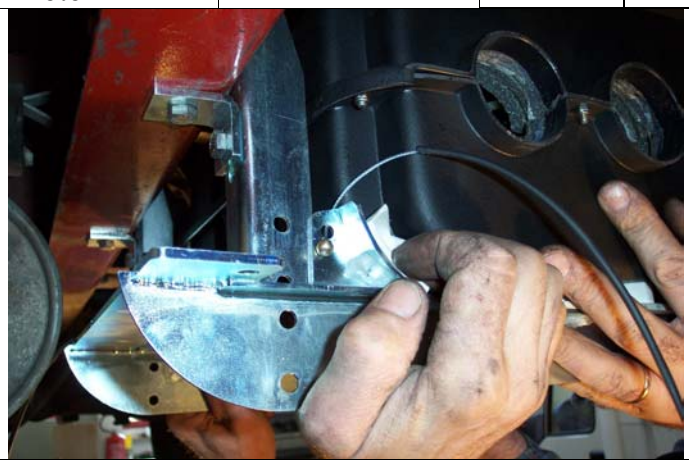
Do not throw the steel cords strenghtly, the anti-vibrating rubber has just to be slightly pressed.

Photo n° 21 /3 code

7.3.6

Lift the support with the EG20 / EG25 and **bring them to the right position.**

Photo n° 22



7.3.7

Fix definitively the support frame (code 932.067) to the uprights by using their screws and grower.

Fix deeply the screws blocking the support's frame to the vertical rods by using the grower in equipment in the right way.

Photo n° 23

Photo n° 23/1

7.4	**Electrical connections**		

7.4.1	Cable's section for the **connection to the battery of service**		

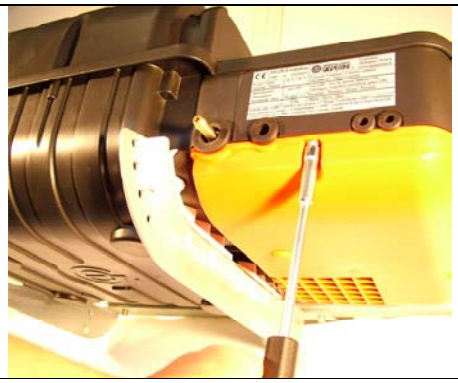
Use two cables ! (The first for the positive pole, the second for the negative pole)
Do not use the vehicle's frame as mass connection!

EG20 / EG25 and battery of service's distance	Section to use	Note
Inferior to 4 metres	**10 mm²**	Red (+) Blue (-) Anti-flame type 90°C
From 4 to 8 metres	**16 mm²**	The same

7.4.2	Electric installation	Photo n° 24		

Do not connect the battery's cables before the installation of an electric knife-switch !
(see installation scheme)

Remove the service cover code 932.004



7.4.3	Photo n° 25		

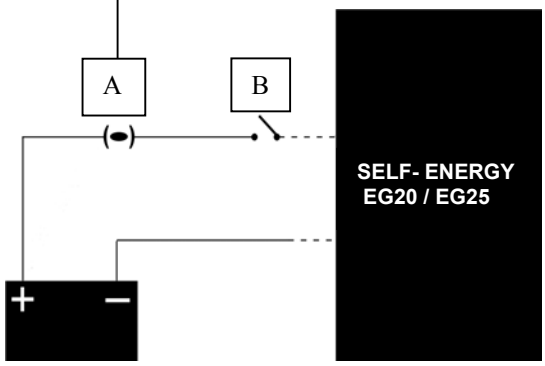
Locate the **80 Ampere knife-switch (B)** and **80 Ampere fusible** 's fixing parts (A) .

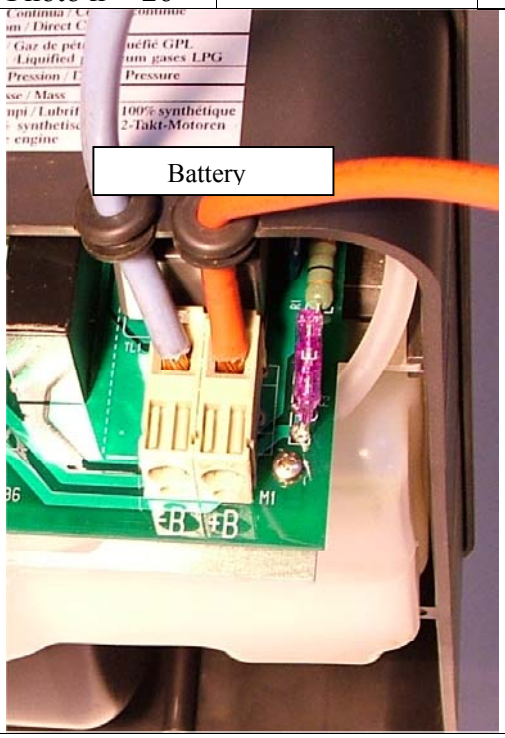
Expand the connection's cables from service battery to EG20 / EG25.

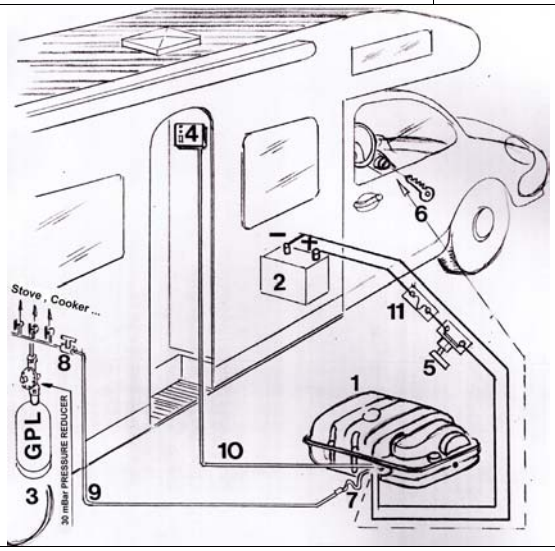
Notes:
-Use a restraint/cables protection's sheath.
-the cable's fixing must not cause traction, abrasion or slope .
-Avoid the cable's conduit next to warmth sources and/or cutting areas.
-The knife-switch "B" has to be installed in a position easy to achieve by the user .

Recommended fuses

14x51**GL**(32A); 10x38**GL**(32A); Automotive **Megaval** (40÷50A);
Automotive **Midival** (50÷60A); Automotive **Maxival** (50÷60A);
Buss **Class T** (40÷50A); Buss **Class F** (60÷70A);
Buss **Class UF** (70÷80A);



7.4.4	Photo n° 26
Connect the cables to the EG20 / EG25's terminal board by going themselves through the two Ø8 chock's holes .	

7.4.5	Photo n° 27
Install **80 A**'s **fuse** (as close as possible to the battery of service's positive pole). Install **80 A**'s **knife-switch**; **leave it** in position **open**. Execute the connection as clear on the installation scheme . Note Mark the knife-switch and the fuse (Example: "EG20 / EG25")	

7.4.6

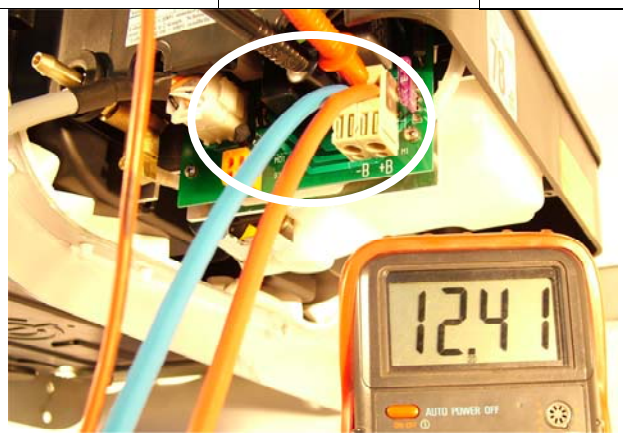
PRELIMINARY CHECK of electric connections:

a) Close the 80 A's knife-switch: **EG20 / EG25 must not set out!** (If it starts, verify that the battery's and EG20 / EG25's connection's polarity is correct.).

b) **Verify the battery's tension's presence** on the terminal board of the service's schedule (see photo).

c) **Reopen the knife-switch.**

Photo n° 28

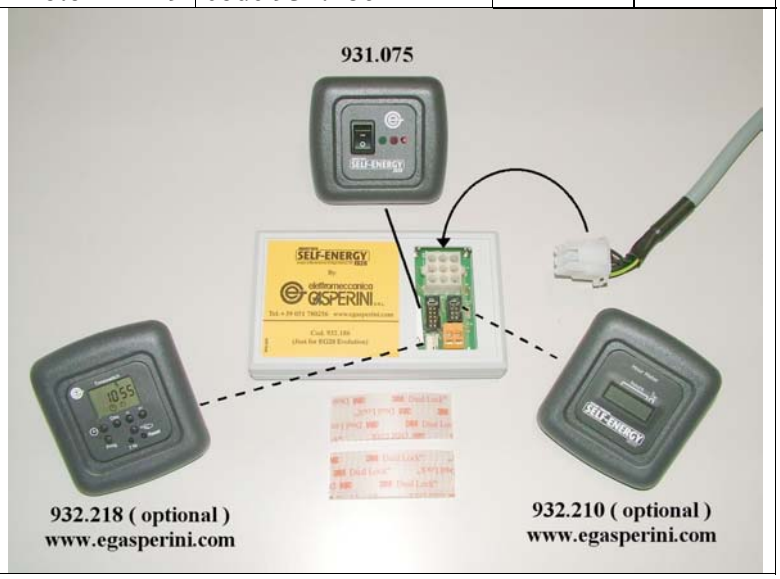


The photo shows an indicative value

7.4.7

-Install the **gear case** (normally within a wardrobe)

Photo n° 29 code 932.186



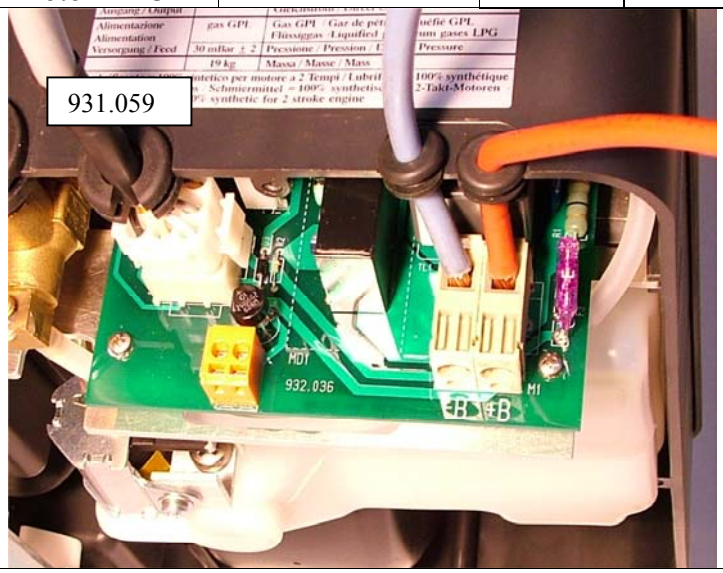
7.4.8.

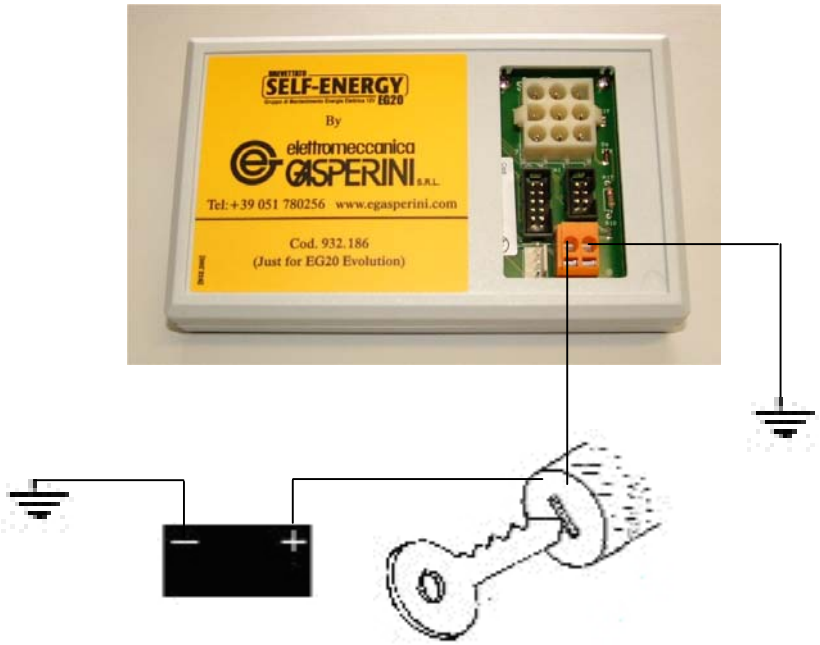
-Positioning on **OFF** of the remote module's switch

-Remote module's installation and connection to the gear case.

Note:
The installation's area of the remote module has always to guarantee acoustic and visual signalling to the user.

Photo n° 35 code 931.075

7.4.9	Photo n° 31
Connect the signaling cable (code 931.059) to the service schedule which lies on the EG20 / EG25.	

7.4.10	Photo n° 32
Identify on the motor home's electric plant a **+12 Vdc clamp when** the motor home's **engine is running** ; **0 Vdc clamp when** the motor home **engine is not running**. This clamp **(+D or SC**) is normally used to drive the trivalent refrigerator. Make the connection as shown in the picture to activate "security blockage" which has the following functions:	

Motor home engine condition	EG20 / EG25' s condition
Running	**NOT running**
Switch-off (motor home in pause)	After having received the approval (OFF, then ON on EG20 / EG25 command remote control) EG20 / EG25 is ready to start the automatic running Note: As soon as the motor home stops (engine off), the gearcase of the EG20 / EG25 activates an acoustic signaling ("Bip"). The "Bip" advices the user to make sure that all the conditions to make possible EG20 / EG25' s running have been respected. Do not use EG20 / EG25 inside ferryboats, garages, close and not suitable places..

7.4.11		Photo n° 33	Photo n° 33/1		

Execute the wires 's **connection** which activate the "**security blockage**" by using the M1 terminal board (on gear case cod. 932.186) or M3 (on service schedule cod.932.053). NOT BOTH OF THEM!

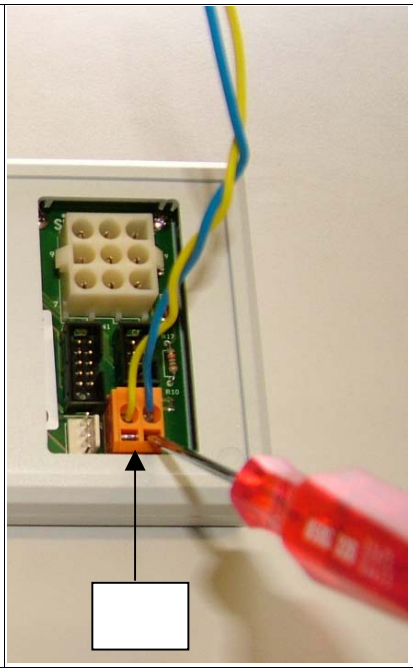
On M1 and M3 terminal board **there aren't polarities** to respect.

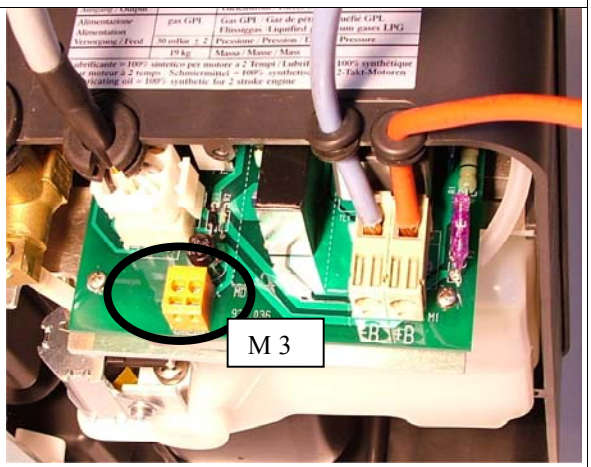
To insert M1 or M3 cables :
use a screwdriver of little dimension; push the M1 or M3 spring contact and insert the cables as shown in the photo.

-Connect **a wire between** M1 (or M3) **and the negative pole of the vehicle.**

-Connect **a wire between the free terminal** (of M1 or M3) and **an "under key" contact** which on the motor home is indicated with the abbreviations +D or SC.

Verify that this signalling is to 12V (10v minimum – 16V maximum) when the motor home engine is on and 0V when the motor home engine is off.





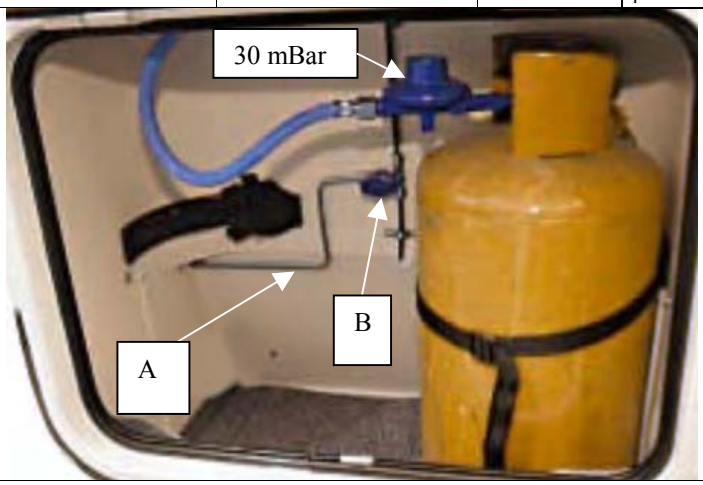
7.5	**LPG gas** plant's **installation**		

7.5.1	Photo n° 34	code	

Install a gas tap (B) and a new feeding line (A) to feed the EG20 / EG25 starting from the pressure reducer (30 mBar).

To use:
- Ø 8 mm suitable copper (or iron) tube next to EG20 / EG25.

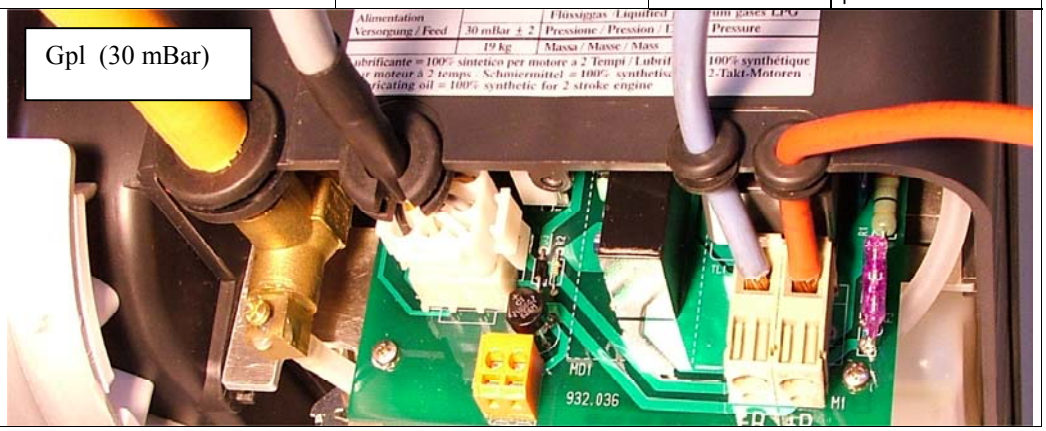
-Mark the tap with the sign "EG20 / EG25"



7.5.2	Photo n° 35		

- homologated **flexible tube** (about 50 cm) to connect EG20 / EG25 to the copper (or iron) tube.

- Close the flexible tube by using steel bands .

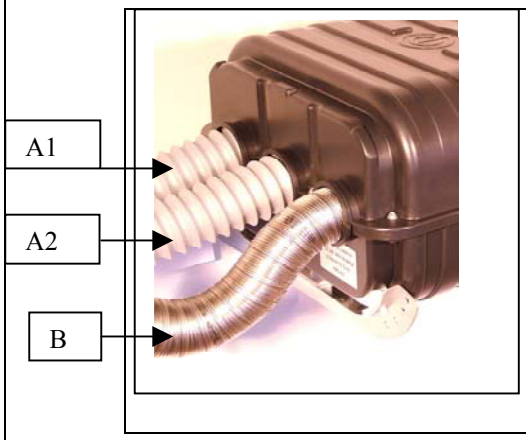


7.6	**Tube**'s installation to pipe **exhaust gas** and **hot air**		

7.6.1

Relevant notes about the "exhaust gas's tube" and "hot air's tube"(produced by the EG20 / EG25 during its running)

- The tube's minimum internal **diameter** to use, in order to pipe exhaust gas and hot air, is **50**mm.
- The tube's minimum internal **diameter** to use, in order to pipe EG20 / EG25's cooling air , is **55**mm.
  Tubes with inferior internal diameter alters the right generator's cooling, causing repercussion on the EG20 / EG25's working and endurance.
- If exhaust gas are not piped to roof and /or hot air is not used to warm possible motor home's areas, it's necessary to install anyway three tubes with a minimum length of 0,5 metres .
  To avoid the liquid's flowing back inwards the generator, the tube's ends must be directed downward.



A1 ……...< 5 metri / meters /mètres
A2 ……...< 5 metri / meters /mètres
B ……< 5 metri / meters /mètres

(A1 + A2 + B) ……. **< 12** metri / meters /mètres

7.7	Exhaust gas's piping		

7.7.1	Modality		

7.7.1.1		Photo n° 36		

SELF- ENERGY EG20 / EG25 Summary of the different installation modalities of the EXHAUST GAS TUBE

EXHAUST GAS		Materials to use for the SHAPED SIPHON PIECE (2)	Materials to use for the PIECE UNDER THE FLOOR PANEL (3)	Materials to use for the PIECE IN THE PASSENGER COMPARTMENT (4)
Roof Piped (suggested)	Modality A page 5	Flexible steel	Flexible steel	Flexible steel
	Modality B page 5	Flexible steel	PVC flexible (931P2GEN)	Flexible steel
Ground Piped	Modality C page 6	Flexible steel	Flexible steel	
	Modality D page 6	Flexible steel	PVC flexible (931P2GEN)	

ADVANTAGES PRODUCED BY THE MODALITY B COMPARED TO MODALITY A

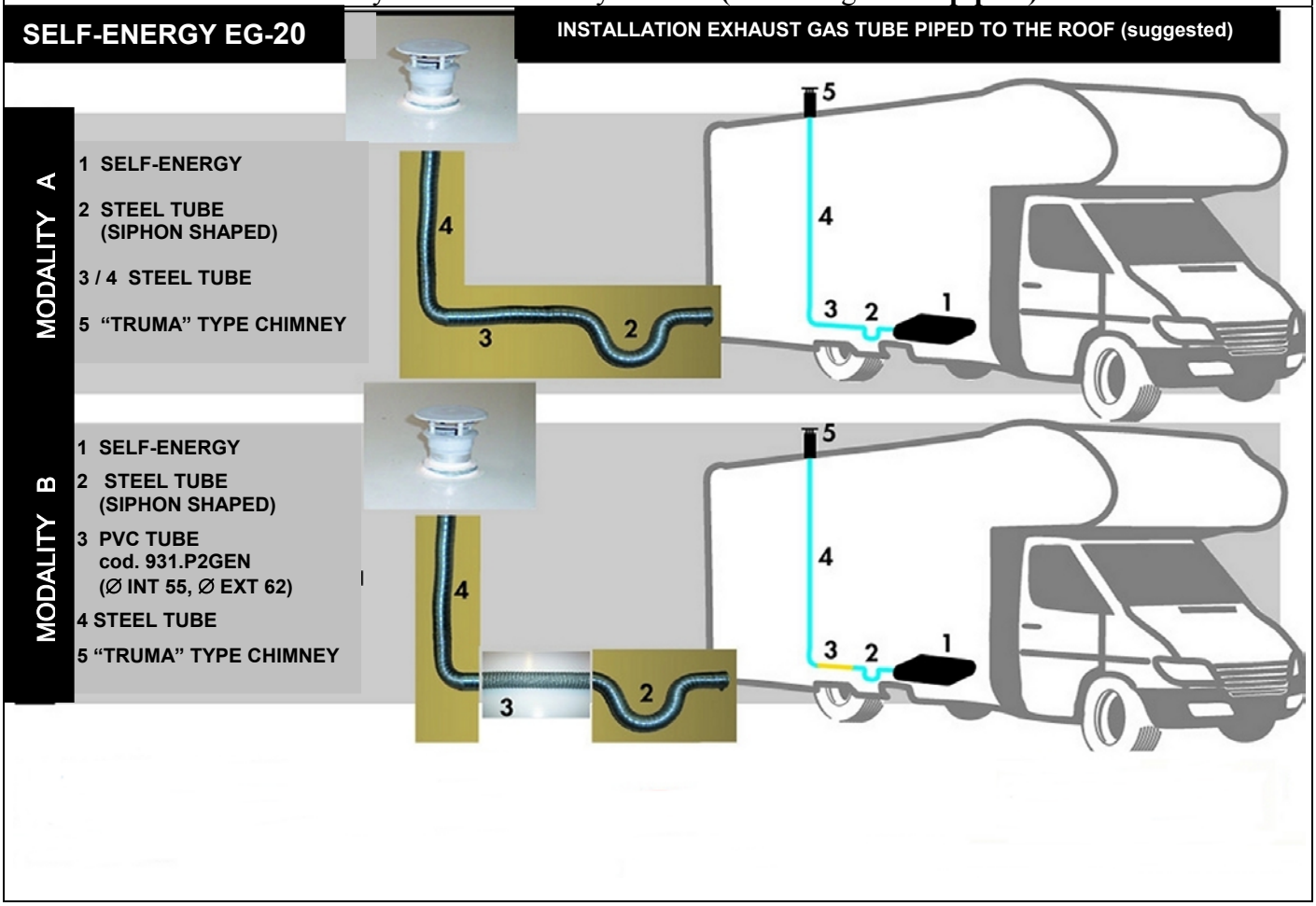
The noise is greatly directed under the floor panel; more silent in the passenger department and in the area where the chimney lies

ADVANTAGES PRODUCED BY THE MODALITY D COMPARED TO MODALITY C

The noise is greatly directed under the floor panel; more silent in the area where the ending of the tube is

7.7.1.2		Photo n° 37			

Modality **A** - Modality **B** **(Exhaust gas roof piped)**



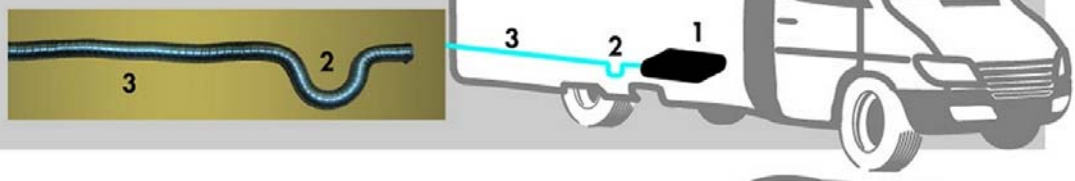
	HOW TO CHOOSE THE INSTALLATION METHOD	
Exhaust gas tube piped to the **ROOF**	• When energy consumption and the user's needs require prolonged functioning times of the EG20 / EG25 Note : please check that roof lights are provided with a ventilator taking air out of the vehicle	
Exhaust gas tube piped to the **GROUND**	○ When energy consumption and the user's needs require short functioning times of the EG20 / EG25. Note : the fumes should be piped beyond the rear side of the motor caravan	

7.7.1.3	Photo n° 38			

SELF ENERGY EG-20 **INSTALLATION EXHAUST GAS TUBE TO THE GROUND LATERAL**

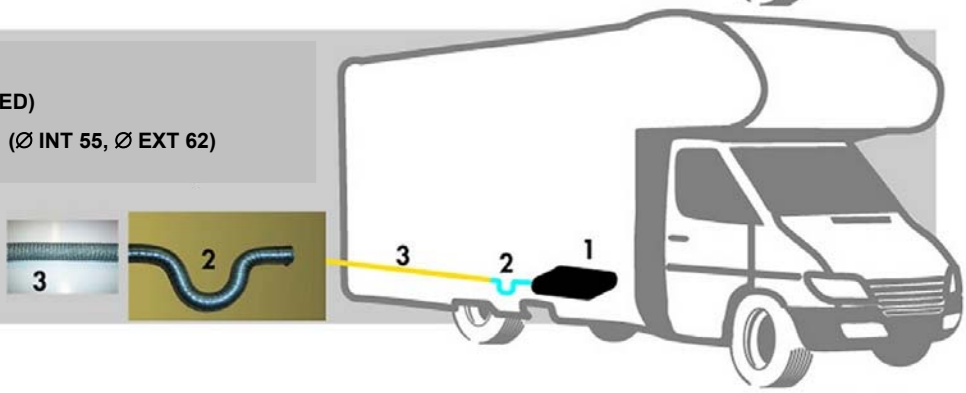
MODALITY C

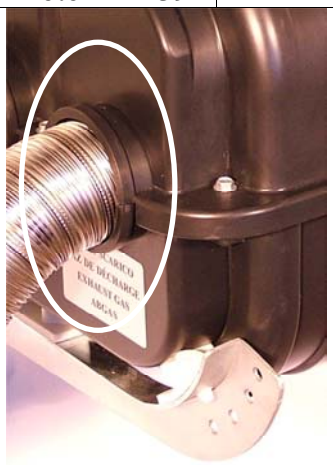
1 SELF-ENERGY
2 STEEL TUBE (SIPHON SHAPED)
3 STEEL TUBE



MODALITY D

1 SELF-ENERGY
2 STEEL TUBE (SIPHON SHAPED)
3 PVC TUBE cod. 931.P2GEN (∅ INT 55, ∅ EXT 62)

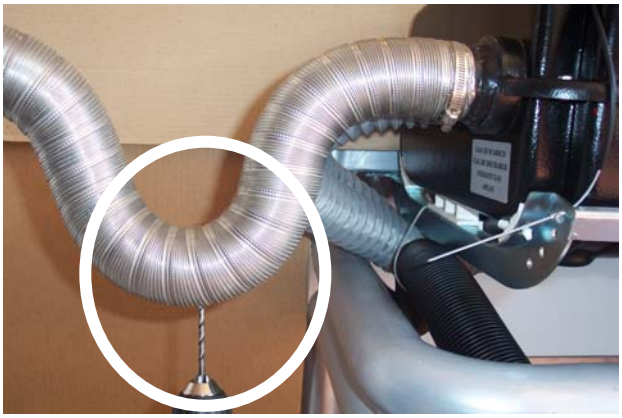
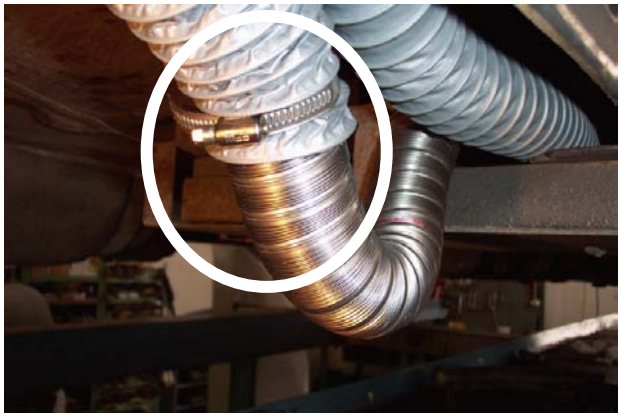


7.7.2.1	Photo n° 39			
Insert the flexible steel tube inside the EG20 / EG25 Fix it with silicone or polyurethane.				

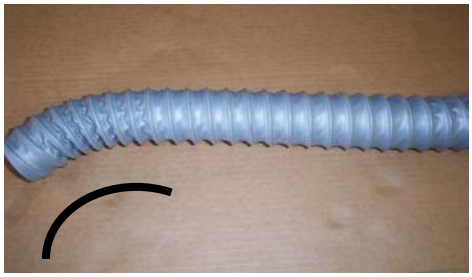
7.7.2.2			

Photo 40/1: **Fold** the siphon tube as shown in the photo. **Pierce** the lowest part by using a Ø 3,5÷4 pin

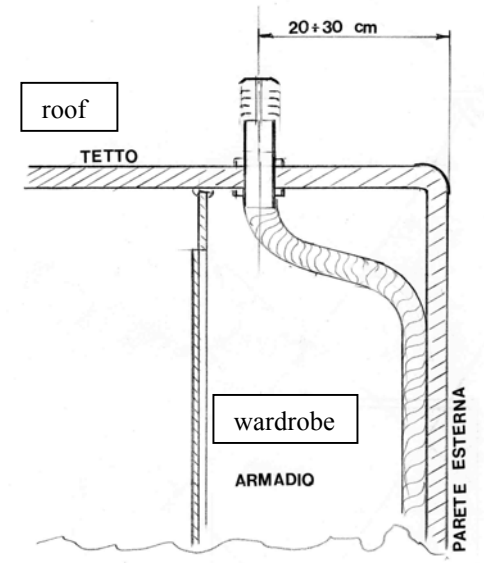
Photo 40/2: If exhaust gas is ground piped, the last piece of tube (the final part) must be made of flexible steel or **PVC cod. 931.P2GEN** (suggested – see photo -)

Photo n° 40/1	Photo n° 40/2
	

7.7.3	Exhaust gas ground piping		

7.7.3.1			
		Photo n°40/3 cod. 931P2GEN	
Foto 40/3: The last part of the exhaust gas tube must be directed slightly downward to avoid the entrance of water (rain, vehicle's washing etc)			

7.7.4	Exhaust gas roof piped		

7.7.4.1	Foto n° 41/1			
In the picture, chimney is backward compared to the motor home wall. The noise which goes out from the chimney should be further more "deadened" because the roof comes between as a shield towards the other motor homes parked nearby. This type of installation is a proposal; it has to be analysed chance by chance. Use a **steel tube inside the vehicle** (normally the tube lies inside a wardrobe). The tube has to be used **exclusively for the EG20 / EG25' s exhaust gas**.				

7.7.4.2	Photo n° 41/2	Photo 41/3		
Chimney must not obstruct exhaust gas's emission upward! Use (for instance) chimneys as in the photo. Chimney must be placed far from the windows or aspiration's fans.				

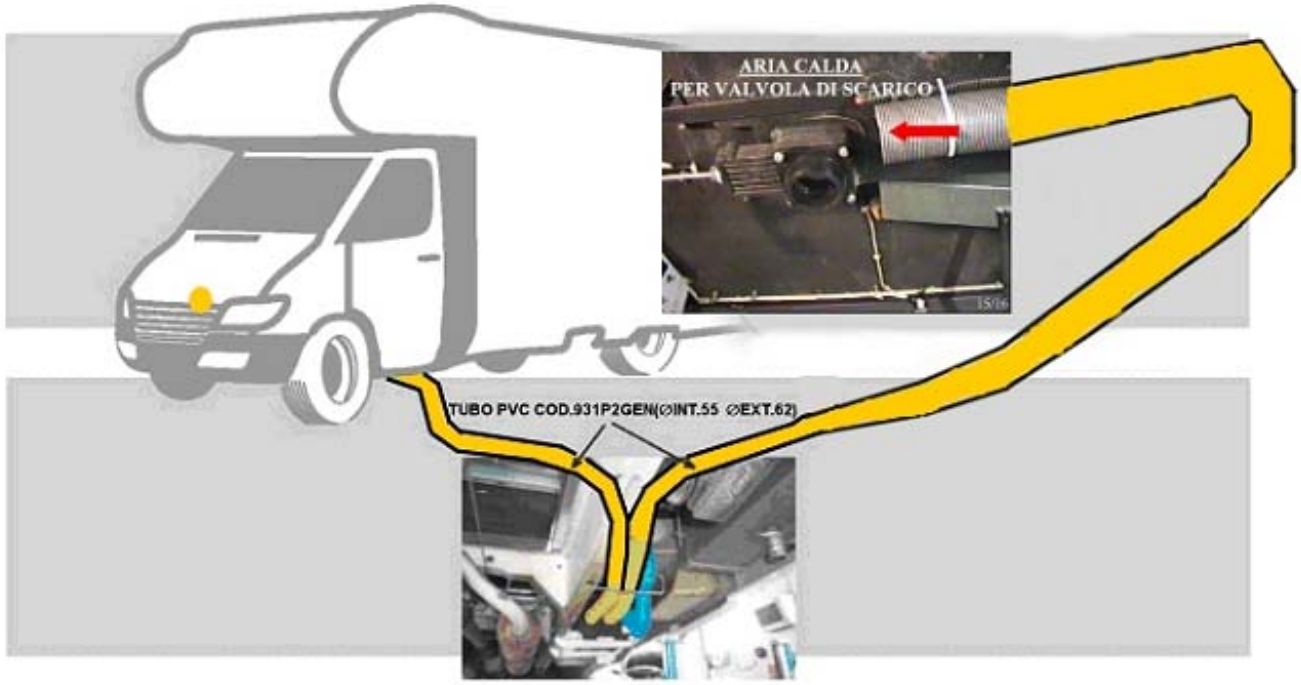
7.8	Tube's installation necessary to hot air piping		

7.8.1		Photo n° 42			

EG20 / EG25 's recovered hot air can be piped towards exhaust valves, engine cabin and / or tank.

Note:
Hot air's exits **MUST NEVER be obstructed !**
EG20 / EG25 hot air's exits **MUST NOT** be piped **inside the motor home !**

SELF-ENERGY EG20 / EG25 HOT AIR FOR THE EXTERIOR CRITIC PARTS

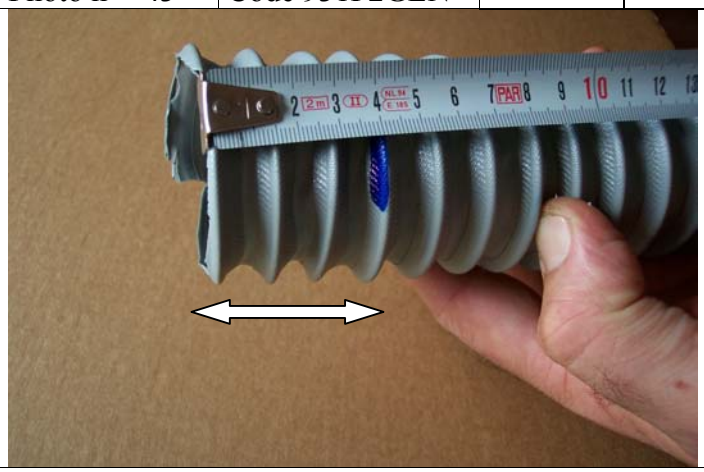


7.8.1.1	Photo n° 43	Code 931P2GEN		

Generator side:

-Mark the two tubes

COD.931.P2GEN (Ø int 57 mm) to a distance of 40 mm from the end.

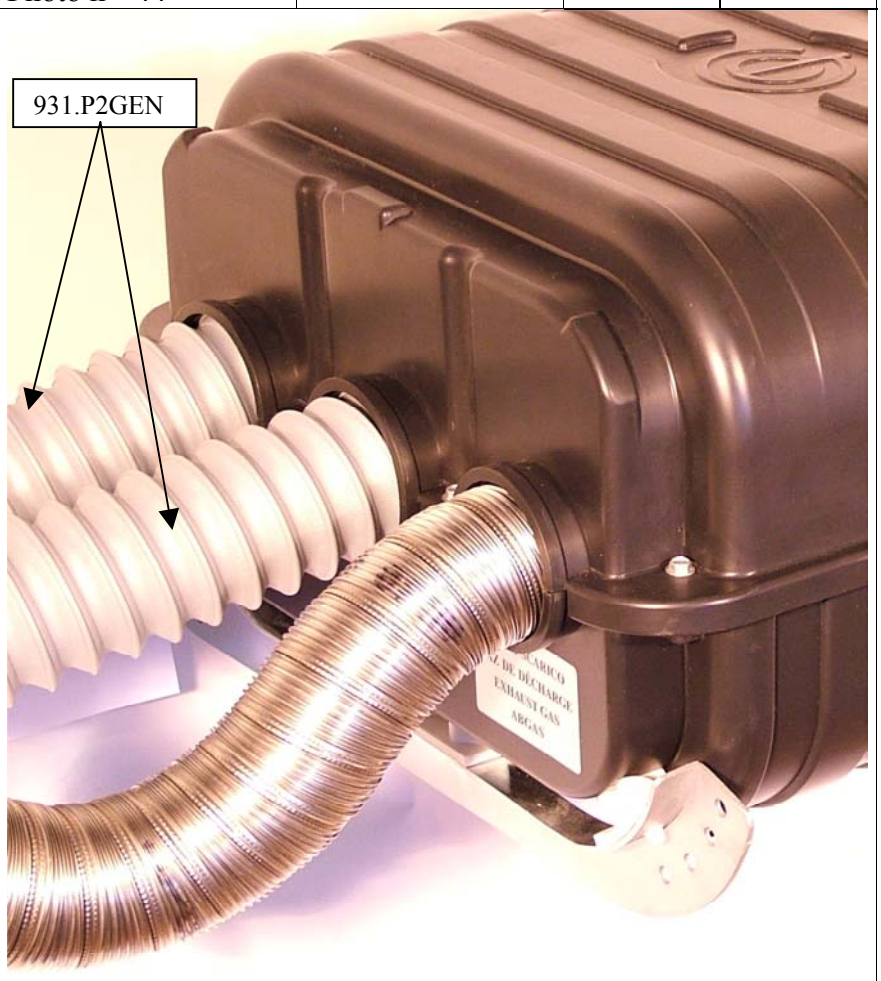


7.8.2	Photo n° 44			

Apply silicone on the tubes.

Insert the two tubes inside the hot air's holes as long as the marked point is reached

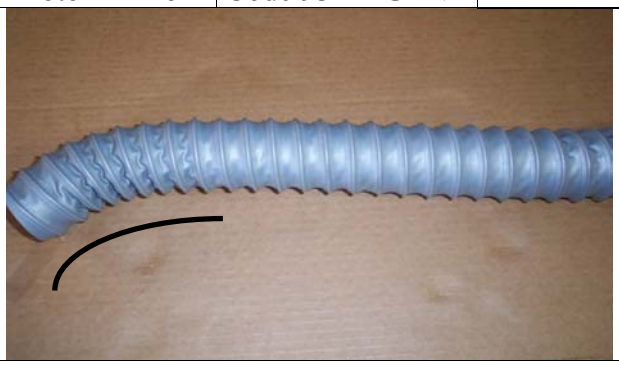
Attention:
Do not insert the tubes beyond the marked point ! (nearby the hot air's tubes there are parts moving).



7.8.3	Photo n° 45	Code 931P2GEN		

Fix the hot air's tubes to the vehicle by using bands.

Note:
The tube's free end must be directed downward (to avoid rain water's entrance)



8 Test

8.1 Battery of service's efficiency

1) Connect a load of about 50 Watt to the service battery (for instance: lighting inside the lamps on the motor home)
2) Use a tester to gauge (to control) the service battery's level.
The measured level has to be **superior to 12 Volt**

8.2 Test procedure

What to make	Result
Close the EG20 / EG25's battery **knife-switch.**	
Open the **EG20 / EG25**'s gas **tap** .	
direct on **ON** (I) the remote module's switch →	On the remote module we have to see in sequence: 1) two green and red led lighting which lasts one second 2) Acoustic signal's emission which lasts one second 3) The green led starts lightening slowly.
If the battery' tension is **inferior** to the programmed threshold (about **11,9 Volt**) →	**EG20 / EG25 activates immediately.**
If the battery's tension is **superior** to the programmed threshold (about **11,9 Volt**) →	**EG20 / EG25 does not start running; it remains in "stand by"**

8.2.1	**How to create EG20 / EG25'S starting conditions**		

First possibility	**Second possibility**
Apply a load (lightings, hair dryer etc) to unload the battery of service; The EG2O activates as soon as the tension goes down the programmed threshold (about 11,9 Volt)	When the battery's tension is **superior to 12 Volts** (and inferior to 13 Volts) **the EG20 / EG25 can be activated by pushing the button (A)** which lies on the remote module: the switching off is always automatic . Note: Also in this case, EG20 / EG25's running goes on as long as the service battery will reach the programmed highest threshold (about 14,5 Volt)
	Photo n° 46
	

Once started, EG20 / EG25 runs as long as the battery's tension reaches the programmed highest threshold (about 14,5 Volt)
The running length depends on the battery condition : from few seconds to some hours

Note:
If there is air in the plant which feeds the EG20 / EG25 (installation phase or tank changing) the EG20 / EG25, probably, will begin running by using the starting with "**modulated gas dosage**" that starts automatically after the second starting attempt.

9	Generator use	☜	

9.1	Introduction		
EG20 / EG25 generator is managed in an automatic manner by a gear case which constantly controls the battery's tension . **The user has just to activate or deactivate the EG20 / EG25 through (by using) the remote module** (I) switching on - (0) switching off			

9.2				
Motor home running (see 12.2) (motor home engine runs). →	The **security blockage**'s circuit **forbids EG20 / EG25**'s running			

9.3				
Motor home in pause (motor home engine , switched off) →	The **switching off** followed by a subsequent **switching on** of the button on the remote module, **permits the EG20 / EG25's running.** The user has to verify the presence of security conditions which are suitable to the EG20 / EG25's running. The EG20 / EG25 must **not** be activated **in closed or not suitable environments (as garages, ferryboats).**			

9.3.1				
EG20 / EG25's starting →	- Open the gas all'EG20 / EG25 - Close EG20 / EG25's knife-switch - Direct on 1(**on)** the remote module's knife-switch - The gear case makes a **system's check.**			

9.3.1.1				
" loaded battery " situation → (12÷14 Volt)	EG20 / EG25 in "stand by". In this case, the **green led** starts lighting (cadence of 1 par seconds) .			

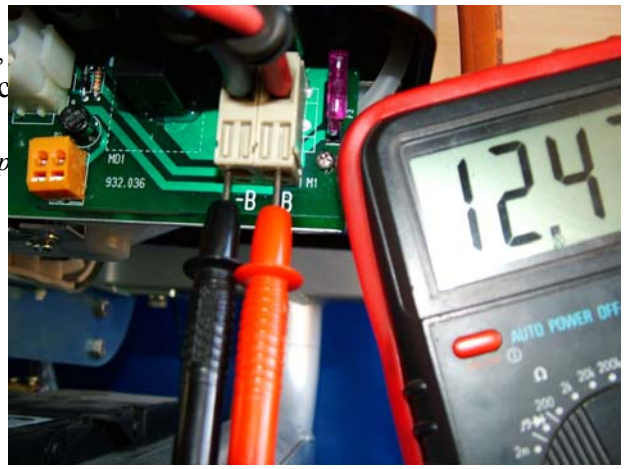
9.3.1.2				
"partially unloaded battery" situation → (tension inferior to 12 Volt)	In this case, the gear case makes EG20 / EG25's **starting** procedure. When EG20 / EG25 starts running, the green led is constantly alight.			

9.3.1.3				
"completely unloaded battery" → (exhausted battery which cannot be charged again)	The generator **can't work** . In this case the gear case emits a "damage" acoustic signaling. Change the battery			

9.3.1.4	• **Start/Stop threshold** • **Variables functioning times**	☜	⚑

As long as the battery's tension level goes down below the minimum threshold (about 12Volt)[1], EG20 / EG25 automatically activates taking the battery bac to the border superior threshold (about 14,5 Volt)[1].

(1) : *Mess on the terminal box of the EG20 / EG25 as indicated in the p*



EG20 / EG25 's **running time changes,** it depends on the following elements:

1) battery's loading level
2) battery's ageing condition
3) capacity (Ah).
4) battery's doorway temperature.
5) current's use assimilation .
6) battery's inactivity time.
7) battery's unloading modality:
   - slow discharge (slow discharge's currents but long lasting) it needs relatively long loading time
   - rapid discharge (high discharge's currents but short lasting) it needs relatively short loading time.

9.3.1.5	**FREQUENT EG20 / EG25 START UPS**

Causes:

A) "Sleeping" leisure battery

DO NOT replace the battery. Please carry out de-charging and re-charging cycles (points 1,2,3,4)

This situation can occur when the leisure battery is not used very often (or is new) and/or in winter. See advice 1.

B) Empty/faulty leisure battery

Replace the battery

C) How to check whether the leisure battery is "sleeping" or empty/faulty

(the following tests are just a suggestion/indication!)

1) EG20 / EG25 in OFF mode
2) Empty the leisure battery up to about 11,3 V with a charge of about 5 A (e.g.: you can switch on 4/5 lights)
3) When the battery is 11,3 V (about) → EG20 / EG25 in ON mode and increase current up to 12-15 Amps (e.g.: you can switch on 7-8 lights + TV)
4) Switch on the EG20 / EG25 until it switches off automatically. If the Self-Energy EG20 / EG25 has been running for less than 2 hours, it is recommendable to repeat points from 1 to 4 .
5) If the Self-Energy EG20 / EG25 has been running for more than 2 hours (remark 1) the battery us likely to be "sleeping".

One or two cycles (points 1,2,3,4) will "wake up" the "sleeping" battery.

Advice 1

Use leisure batteries with a total capacity of at least 150 – 200 Ah if using the vehicle also in winter or if the battery is often "sleeping".

Alternatively, it is possible to use the "BRIDGE" 

(a device that monitors and controls the parallel connection between the engine battery and the leisure battery. See also www.egasperini.com)

Remark 1

If the EG20 / EG25 has been running for more than 12 hours, the tests could have been carried out incorrectly and it is advisable to call a technician.

9.4	**Deactivation**		

9.4.1	Momentary deactivation		
Turn on "0" (OFF)the button of the remote module.			

9.4.2	Prolonged deactivation		
Switch off the module remote's switch **(0-OFF)** **Close** the **gas** tap (dedicated to EG20 / EG25) **Open the electric knife-switch** (dedicated to EG20 / EG25) Note: The procedure suggested aboard may be used to deactivate and isolate completely both the generator and the other motor home's plants			

10	**Suggestions** for a proper use	☜	

10.1			
With temperature **inferior to - 5°C** →	When EG20 / EG25 runs with a temperature inferior to –5°C , please wait **at least 2 minutes of running** before switching off it.		

10.2			
During **the night**	**Consider** the possibility of **switching off EG20 / EG25** during the night in order to make no noise; leave it automatically running during the day. RELEVANT: - If the mobile home is used **<u>also throughout the winter,</u>** we recommend the installation of service batteries with a global capacity indicated on point 15 of manual (Technical features) - Before a possible nocturne switching off, make a manual switching on by using the remote module's button		

10.3			
Oil filling up	Once a year it is recommended to make an oil level's check to avoid making an oil filling up during the trip		

10.4	**OPTIONAL**		
"BRIDGE" (#) Patented and homologated product : see <u>www.egasperini.com</u>	Elettromeccanica GASPERINI launched a new product: the Bridge(#), an automatic/manual device that monitors and controls the parallel connection between the engine battery and the leisure battery/ies.		

10.5	**OPTIONAL**		
"TimeSwitch" see <u>www.egasperini.com</u>	Elettromeccanica GASPERINI has created the **TimeSwitch** (a timer) which enables to programme the functioning of the EG20 / EG25.		

11	**Maintenance** with replacement of worn parts		

11.1

The maintenances linked below, are made by "Elettromeccanica Gasperini" laboratories (or Authorized Assistance Centers):

Maintenance period		**Main working**
Each 300-400* running hours	Equivalent to 3÷4 litre oil consumption	**Substitute the silencer** with possible calibration of GMC. Possible updating
Each 600÷800* running hours	Equivalent to 6÷8 litre oil consumption	Possible starting spunk and **cooling fan's replacement** .
Each 1500÷1800 * running hours	Equivalent to 15÷18 litre oil consumption	**Dynamo rotor's replacement.**
*Indicative value		

11.2

Oil filling - up (1 litre ≈ 115 running hours)	The oil level is checked by a probe which lies within the EG20 / EG25 tank. The minimum oil level is signalled on the remote module and causes the automatic deactivation of the EG20 / EG25. To make the oil filling-up **use exclusively 100% synthetic oil as showed on the list which follows**: ELF Moto 2xT Tech - MOBIL 1 Racing 2T – AGIP 2T Racing – ERG K Kart 2T Corse – CASTROL TTS EP 2T – PUTOLINE TT Scooter+ – CASTROL Biolube

11.3

Checks to make at least one time / a year

"Aeration holes" and " drainage condense oil"

* Make sure that the holes are open, above all after having driven through distances with muddy bottom, high grass etc.

Gas plant and tube's check

* Check the gas plant and particularly the expiry date of the flexible tube (its security's period).

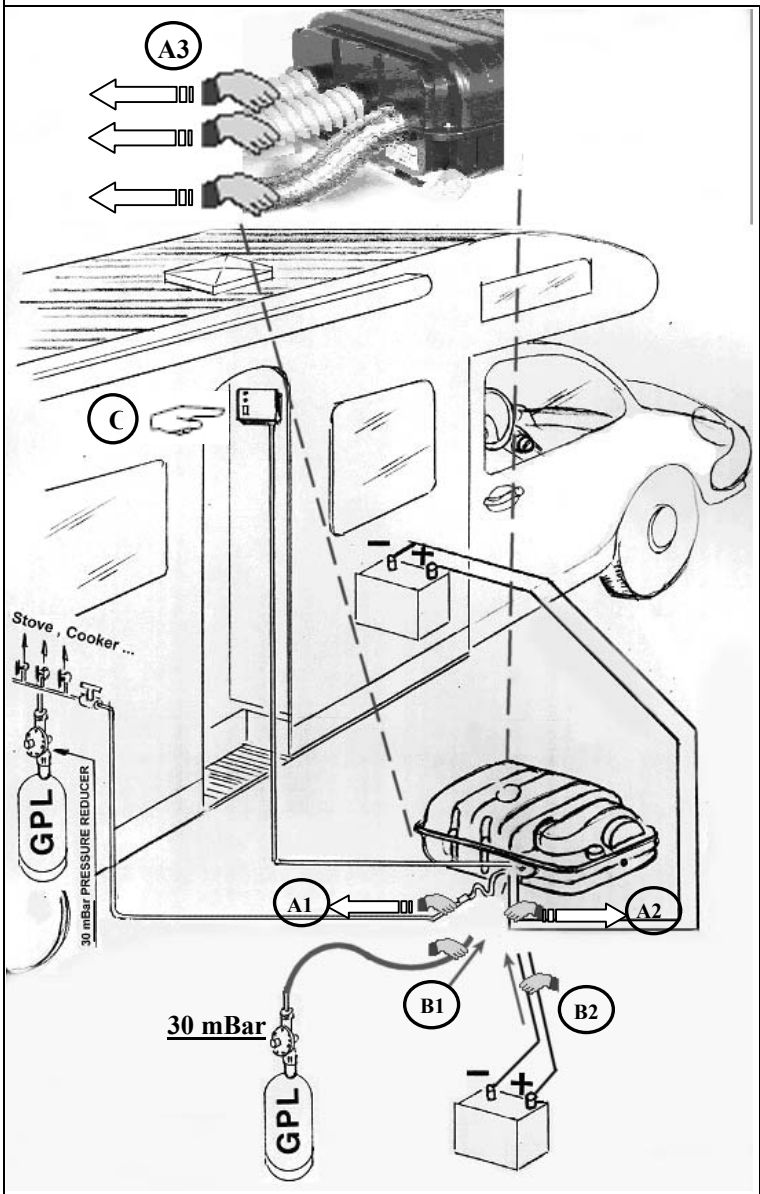
Generator EG20 / EG25 group's check (use this check to make the oil filling – up)

* Check that the **cover** has not breakings, deformations.
* Check the whole **fixing system** (chassis, electric cable's condition)

12	**Failure's research**		

12.0	Tests to execute when the EG20 / EG25 does not start (see 12.1 and 12.2)		

Carry out following operations:



1. **Disconnect (A1)** the gas pipe from the Self-Energy
2. Temporarily **connect (B1) another gas bottle**
3. **Disconnect (A2)** the battery cables
4. **Temporarily connect (B2)** to **another battery** (12V 100Ah).
5. **Disconnect (A3) the hot air and fumes pipes** from the generator**.**
6. Start the generator **(C)** (if it does not start automatically, press the manual-start switch).
7. If the Self-Energy EG20 / EG25 does not start :
   A) Write down the status of the LEDS (see 12.2)
   B) Contact the technical assistance

12.1

Failure's research (see 12.0 & 12.2)

The head gear case makes a diagnosis which identifies, in many cases, the EG20 / EG25's improper functioning.
A possible improper functioning is coded through proper acoustic (buzzer) and lighting (green and red led) signaling on the remote module .

12.2

Failure's signalling (see 12.0 & 12.1)

Acoustic and visible signalling on the EG20 / EG25 running conditions

GREEN led	**RED** led	Acoustic signaling	Indicated **Condition**
1 flash every 0,8 sec	Switched off	Switched off	Stand by - Waiting
Constant alight	Switched off	Switched off	It supplies energy
Switched off	Constant alight	1 every 10 sec	Gas shortage / damaged
Switched off	1 flash every 0,1 sec	1 every 10 sec	Oil shortage
Switched off	1 flash every 0,8 sec	1 every 10 sec	High internal temperature
1 flash every 0,2 sec	Constant Alight	1 every 10 sec	Extremely unloaded/damaged battery
1 flash every 0,8 sec	1 flash every 0,2 sec	1 every 10 sec	F1 and F2 fuse's replacement (service schedule)
1 flash every 0,2 sec	Switched off	Switched off	Starting phase
1 flash every 0,8 or 0,2 sec	Switched off	1 every 5 sec	Security blockage activated (see 9.2)

12.3

Anomalies - Checks / Solutions

Anomaly	Check / Solution
Generator doesn't start (damage signaling or consumed gas) →	Check that the gas is enough and that the tap is open. Verify that the **gas pressure is of 30 mBar.** In order to make a **test**, feed the EG20 / EG25 by using **another tank and another pressure reducer!**
Fuse F1 and /or F2 break's signaling on power's circuit →	**replace F1 and F2 fuses** with others of the same kind (do not increase the capacity!)
High temperature's signaling	check that the **cooling holes are open** check the fan's integrity (*)
EG20 / EG25 starts, **runs for a few minutes and then it stops** by signalling consumed or damaged gas	check that the cooling holes are open check the fan's integrity (*)
A loud mechanical noise comes from the EG20 / EG25	Check the fan's integrity. (*)
Lubricant lack's signaling with full tank	Contact the assistance centre
The generator oscillates from **running and stopping which last few seconds.**	**Hypothesis (A):**The battery of service is **"asleep"** (#) **Hypothesis (B):** The battery of service is exhausted (#)
The generator **runs making efforts** and it works badly	**Hypothesis (A):** **The gas pressure** in the motor home's plant **is not right.** Verify that the gas pressure is of 30Mbar; eventually change the pressure reducer. **Hypothesis (B):** The engine's exhaust "light" is obstructed and / or **the group silencer has to be changed.** (#)
Other anomalies	Please contact Elettromeccanica Gasperini S.r.l.

(*) Attention: Read the "Security" section.
(#) Read the previous paragraphs

13 Transport

13.1

To send the generator to Elettromeccanica Gasperini or to a specialized assistance centre, please execute the following instructions::

Empty out the oil tank.
Arrange EG20 / EG25 in the packing by directing the oil stopper upwards.
Make a good and suitable packing.
Use the original box or a suitable box.
Apply labels that indicate the necessity to transport the box without overturn it.
If possible, use a pallet

ATTENTION !!

****An unsuitable packing causes serious damages to the internal and external frame of the EG20 / EG25 *****

14 Elimination

14.1

In case of scrapping, consider that the generator contains metals (steel, copper, aluminium, lead) and plastics (abs, polyethylene, silicone). Deliver them to car scraps collecting centres. Do not disperse them in the landscape.

15 **Technical features** and Conformity Declaration

15.1

Technical features	**EG20**	**EG25**
Working	Automatic, managed by micro-controller	Automatic, managed by micro-controller
Working Temperature	+50 °C ÷ -25 °C (in case of < 0 °C → use propane gas)	+50 °C ÷ -25 °C (in case of < 0 °C → use propane gas)
Working relative humidity	0 ÷ 95% without condensation	0 ÷ 95% without condensation
Rated voltage	12 V	12 V
Rated current	20 A	25 A
Two – stoke engine feeding	LPG (pressure 30 mBar ±2)	LPG (pressure 30 mBar ±2)
LPG Consumption	0,27 Kg / hour actual working	0,295 Kg / hour actual working
Lubricating to use	100%synthetic lubricating for two-stroke engine	100%synthetic lubricating for two-stroke engine
Lubricating consumption	1 liter / ≈ 115 hours of real working	1 liter / ≈ 115 hours of real working
Oil tank capacity	1,1 litres	1,1 litres
EG20 / EG25 block and trigger box signal	With minimum oil level	With minimum oil level
Sound pressure at 7 m Lpa	51 dB (A)	52 dB (A)
In compliance with directive 2000/14/CE:	Measured sound power LwA: 74 dB (A)	Measured sound power LwA: 76 dB (A)
	Assured sound power LwA: 76 dB (A)	Assured sound power LwA: 78 dB (A)
Weight	19 Kg with full lubricating tank (+ 2 Kg for console support)	19 Kg with full lubricating tank (+ 2 Kg for console support)
Length, Width, Height (mm) Dimensions space useful for installation (mm)	565x380x250 H 700x400x280 H	565x380x250 H 700x400x280 H
Advised capacity of the battery	> = 160 ÷ 200 Ah	> = 160 ÷ 250 Ah
Storage temperature	From -25 °C ÷ to +70 °C	From -25 °C ÷ to +70 °C
Maximum altitude working	2000 meters above sea level	2000 meters above sea level
Maximum inclination with operative EG20 / EG25	17%	17%

Note: Performance and consumption values change with the altitude

CE Accordance Declaration n° 002/05

The undersigned representative of the following constructer [dich-ce-002-05-141105-ing]

CONSTRUCTER	ELETTROMECCANICA GASPERINI S.r.l.
ADDRESS	Via Ca' dell'Orbo, 28 – 40050 Villanova di Castenaso (Bologna) - ITALY

or representative the mandatory authorized by the constructer within the Community or European Economic Area reported below

RAPPRESENTATIVE	**********
ADDRESS	**********

Declares thet the product:

Direct current electric generator mod. EG20 *Evolution*

Classification 2000/14/CE: generating set (Enclosure I, point 45)
Rated electric power 0,24 KW
Is accordant with the requirements of the following communal directives and ulterior modifications:

REFERENCE	TITLE OR OBJECT	AMENDMENTS
2000/14/CE	Acoustic emission of the equipment made to work outside - Applied procedure for the accordance's valuation to the directive 2000/14/CE. Enclosure VI-Proc. 2 - Name and addreess of the related system: ECO SpA Via Mengolina, 33 48018 Faenza (RA) - ITALY Related System n° 0714 - Measured acoustic power level: 74 dB(A) - Assured acoustic power level: 76 dB(A)	
89/336/CE	Electromagnetic Compatibility	93/68/CE
98/37/CE	Engines security	93/68/CE

that the standards and/or the technical suggestion reported below have been applied

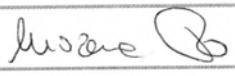
Harmonized standard:

REFERENCE	EDIT.	TITLE	PART
EN292	1992	Machinery security – General requirements	1,2
EN294	1993	Machinery security – Security distance	
EN61310	1996	Directions for the engines security – Markings and execution markings	2
EN/ISO3744	1995	Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering methd in an essentially free field over a reflecting plane	

Other standard and technical directives:

REFERENCE	EDIT.	TITLE	PART
95/54/CE		Radio-electric pertubations of motor vehicles (as technical standard)	All. I
EN1127	1997	Explosive atmosphere Prevention and protection against explosions	1
ISO8528	1998	Reciprocating internal combustion engine driven alternating current generating sets – Measurement of airborne noise by the enveloping surface method	10

Other technical solitions, whose details are included in the documentation or technical manufacture handbook
Other references or information requested by the functional directives.
Methods and procedures for the production's continuity: EG20 quality plane document.

	ELETTROMECCANICA GASPERINI S.r.l.
Signature	
Name	Morena Po
Position	Legal Agent
Villanova di Castenaso (BO) Italy	Data: 14/11/2005

CE ACCORDANCE DECLARATION N° 001/09

The undersigned representative of the following constructor:

CONSTRUCTOR	ELETTROMECCANICA GASPERINI S.r.l.
ADDRESS	Via Ca' dell'Orbo, 28 – 40055 Villanova di Castenaso (BO) – Italy

Or representative the mandatory authorized by the constructer within the Community or European Economic Area reported below

RAPPRESENTATIVE	----------
ADDRESS	----------

Declares that the product

Direct current electric generator mod. EG25 Evolution

Classification 2000/14/CE: generating set (Enclosure I, point 45)
Rated electric power: 0,3 KW
Is accordant with the requirements of the following communal directives and ulterior modifications:

REFERENCE	TITLE OR OBJECT	AMENDMENTS
2000/14/CE and 2005/88/CE	Acoustic emission of the equipment made to work outside - Applied procedure for the accordance's valuation to the directive 2000/14/CE: Enclosure VI-Proc.2 - Name and address of the related system: ECO S.p.A. Via Mengolina, 33 48018 Faenza (RA) - ITALY Related system n° 0714 - Measured acoustic power level : 76 dB(A) - Assured acoustic power level 78 dB (A)	
89/336/CE	Electromagnetic compatibility	93/68/CE
98/37/CE	Engines security	93/68/CE

That the standards and/or the technical suggestions reported below have been applied:

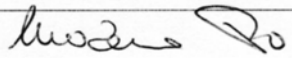
Harmonized standard:

REFERENCE	EDIT.	TITLE	PART
EN292	1992	Machinery security – General requirements	1,2
EN294	1993	Machinery security – Security distance	
EN61310	1996	Directions for the engines security – Markings and execution markings	2
EN/ISO3744	1995	Acoustics – Determination of sound power levels of noise sources using sound pressure – Engineering method in an essentially free field over a reflecting plane	

Other standard and technical directives:

REFERENCE	EDIT.	TITLE	PART
95/54/CE		Radio electric perturbations of motor vehicles (as technical standard)	All.I
EN1127	1997	Explosive atmosphere Prevention and protection against explosions	1
ISO8528	1998	Reciprocating internal combustion engine driven alternating current generating sets – Measurement of airborne noise by the enveloping surface method	10

Other technical solutions, whose details are included in the documentation or technical manufacture handbook.
Other references or information requested by the functional directives.
Methods and procedures for the production's continuity: IO-932 rev. 3 of 30/04/2009 and ulterior modifications:

		ELETTROMECCANICA GASPERINI S.r.l.
	SIGNATURE	
	NAME	Morena Po
	POSITION	Legal agent
Villanova di Castenaso (BO)		Date: 05/05/2009

WARRANTY

The 12V Self-Energy System EG20 / EG25 is always rigorously tested in the production unit before leaving the factory. The generator is covered by a warranty for any defect in the materials used or in manufacturing discovered within 24 months after the date of installation. The installation must be carried out within 6 months (*) after the date of end of production and no later (the date is indicated on this form). The warranty does not cover fuels or consumption materials (e.g. oil) nor replacement for wearing of: spark plug, muffler and dynamo brush (see also "maintenance" section in the user's handbook). The warranty provides free repair of the generator, which has to be sent to Elettromeccanica Gasperini s.r.l premises or to an approved repair station. The two-way transport, assembling and disassembling costs will be charged to the Customer. The present warranty does not provide the replacement of the generator. The present warranty does not cover damages caused by external factors or by mistakes due to inexperience or carelessness of the installer/user. The present warranty does not cover possible refunds requested by the customer (direct or indirect damages caused by system breakdown or malfunctioning, etc.) Place of lawful jurisdiction for any controversy is the court of justice of Bologna (Italy).

(*): In some exceptional cases (for some EG20 / EG25 identification numbers and within 6 months after the end of production), the retailer/workshop can ask for an postponement of the installation deadline. The request must be sent to Elettromeccanica Gasperini, who will evaluate it and state whether the conditions for a postponement are valid. Request and authorization must be written and faxed through to Elettromeccanica Gasperini s.r.l.

In order for the product to be covered by the warranty, the following requirements must be fulfilled

A) The "Self-Energy EG20 / EG25" generator may exclusively be installed on motor-caravans and caravans with leisure vehicles function.

B) Please, fill in this **warranty** form and send it to **Elettromeccanica Gasperini within 10 days after the installation** (fax: +39 051782428), please attach also the purchase receipt reporting the EG20 / EG25 serial number.

C) **Unless there is a written authorization from Elettromeccanica GASPERINI,** do not remove the cover and the warranty seals (marks painted on the screw bolts and on other parts of the EG20 / EG25).

The Warranty will not be valid if requirements (A) and/or (B) and/or (C) are not fulfilled.

→ **In order to check any possible malfunctioning, carry out the operations indicated in par. 12.0 of the present handbook**

Self-Energy EG20 / EG25 serial number	**Production** date
**********	**********

Customer/ User:

Name:_____*********_____Surname:_____**********_____

Address:_____********_____ZIP code:____*****___City:_____********_____

Tel/mob:_____********_____e-mail:_____**********_____

Stamp → With **Company's** details (company performing the installation)	**********

Your personal data will be used with IT or manual means for after-sales technical assistance purposes.

Purchase and Installation date	**Customer**/User's signature	Installation performing Company's signature
**********	**********	**********