JetPower DIESEL

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GROUND POWER UNIT 115VAC 400 Hz

INTRUCTION AND MAINTENANCE MANUAL

Nº 115.04.7706

GPU 90kVA, 115VAC, 400Hz with 28VDC

Nº 115.09. 7701

SUPERSOM

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SUMARY

SECTION 01 - DESCRIPTION

1.1 - GENERAL

1.1.1 - PRESENTATION

The GPU "JET-POWER DIESEL 115 / 200VAC, 400Hz, three-phase, 90KVA", consists of a generator set with a Diesel turbo engine Iveco 04 cylinder in-line. 4-stroke cycle with direct injection, cranking a WEG generator of 90 KVA, 115/200 volt, three-phase, 400 Hz. Provides electrical power to the aircraft, constantly monitored and regulated electronically, ensuring their maximum and minimum limits of voltage, frequency and current, and in case of failure this protection system, the current to the aircraft stops if out of bounds (off the contactor, if used to 115V 400Hz output). Improper adjustment of voltage or frequency can also cause shutdown. When in use the 28VDC output does not occur disconnection by frequency, only for voltage or current out of bounds.

Has Diesel motor directly coupled to the generator, towable set mounted on sturdy chassis with drawbar and the steering system control with rotating 270 °, with radial industrial tires, 600 x 9. Parking brake triggered with tow bar in vertical position. 315-liter fuel tank, with two side compartments for housing the one hand and cables on the other side 115VAC to 28VDC. Lighting and night signaling system with traffic lights high brightness LEDs, internal and external and signalman Giroflex for warning low level of diesel oil. Electrostatics painting in white. 2KG fire extinguisher with support. Five large access doors for complete ease of access and maintenance. Panel with analogue instruments for measurements of mechanical and digital quantities to electrical quantities. It has brushless generator, with minimal maintenance cost. Generator control that controls and presents the development of all functions automatically so that monitoring does not present failures by over frequency, under frequency, over voltage, under voltage and overload. In the event of failure the system cannot automatically fix the engine is switched off and the full display for fault and instrumentation tells what happened. Fuel tank with large capacity (315 liters). System Diesel oil filters with dual water separator, in drains. Automatic GPU operation which when turned off keeps the engine running for about 3 minutes (adjustable time) at idle, for cooling of the engine and turbo. Protection that immediately shuts down the engine in case of high engine temperature, low oil pressure and low fuel tank, when it arrives at the end of the reservation before entering air in the system. Panel protected against rain by tempered glass thick large, not to be cracked over time, as with acrylics. Transformer / rectifier to 28VDC output, with cable 8 meters and plug R65BS.

Technical assistance in Brazil by the company equipment manufacturer or authorized companies to perform repairs and maintenance in or out of warranty.

The technical assistance in another country will be able to be made by the importer following instructions in this manual or other sent by email, without voiding the warranty. FedEx or DHL, only the cost of shipping, may send parts. If necessary visit from a technician will only be charged travel expenses, no labor charge for three years.

From the 2012 model its operation is fully automated and with the simplest panel, easy to understand, dispensing training of operators. Just turn “on” and “off”.

His commands are simple to operate and can be used by anyone working in the support area by simply pressing a pushbutton "Start" on the console to put into operation and a "Stop" to shutdown. The entire boot process, initial idling, gradual acceleration with little smoke, power generation and measurement is done automatically and is ready to meet aircraft. For shutdown also the process is automatic, keeping the engine running without load, at idle for 3 minutes.

It was designed for use on aircraft (airplanes and helicopters), and external power supply for aircraft maintenance, operation and departure of the turbines.

The "JET-POWER 115V 400Hz 90KVA DIESEL", is composed of two units in the same chassis:

- DIESEL GENERATOR GROUP with output of 115 / 200V, 400Hz, 90KVA.
- MÓDULO OF ELECTRIC GPU "JET POWER 28VDC" Input 115 / 200V, 400Hz and output 28 VDC, up to 2500A (When equipped with the optional "Output 28VDC").

This equipment provides the output voltage of 115 / 200V 400Hz directly from the generator and is the 28VDC power from the GPU, powered by the generator. If necessary service 115VAC to 28VDC and at the same time, the two outputs can operate simultaneously, and it can also provide energy to power up to two external special GPU's with entry 115 / 200V, 400Hz and output 28VDC until 2500A. (Not to be bound normal electrical GPU's having input 220 / 380V, 60Hz).

His commands are simple to operate and can be used by anyone working in the area of support by simply switching on and off.

It is important to follow the hours worked intervals to exchange engine oil, filter cleaning, retightening, etc. (Every 400 hours, change the oil and filters).
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The "JET-DIESEL POWER 115V, 400Hz, 90KVA", is manufactured in strict technical standards and modern industrial technology, using components and high quality raw material to ensure its efficiency, safety and durability.

Its structure and bodywork are designed in 3D system, cut by laser and bent on CNC machines of high precision, with all the included drilling. Has no craft items. All can be exchanged at any time, without need for adjustments. Your resined electronic circuit is drawn and salt corrosion-proof, air and moisture.

1.1.2 - TECHNICAL INFORMATION MODULE "JET-POWER 28VDC".

1.1.2.1 - ENTRY: 115/200 V, three-phase, 400Hz.

1.1.2.2 - OUTPUT: 27 to 32 Volts, with external adjustment of the output voltage in the same knob which adjusts the voltage of 115VAC, 400 Hz.

1.1.2.3 - MAXIMUM CURRENT: 2500 Amps peak for 10 seconds;
1,500 Amps peak for 30 seconds;
400 Amps, continuous.

The current module "JET-POWER 28VDC" provides the starting or in the testing equipment mainly depends on the type of turbine, or the load applied to it.

1.1.2.4 - MAXIMUM POWER: 70 KVA, 15 KVA peak and continuous.

1.1.2.5 - RIPPLE: 0.009% 100 A;
0.09% 300 A.

1.1.2.6 - RETIFICATION: six-phase. (6 diodes).

1.1.2.7 - FILTERING: For high performance filter of 2.4 kHz.

1.1.3 - TECHNICAL INFORMATION GENERATOR GROUP

1.1.3.1 - DIESEL ENGINE:

1.1.3.1.1 - BRAND: Iveco.

1.1.3.1.2 - MODEL: NEF 45 SM2, 04-cylinder, turbocharged.

1.1.3.1.3 - OTHER-INFORMATION: CONSULT THE ENGINE MANUAL THAT CAME WITH IT.

1.1.3.2 - GENERATOR:

1.1.3.2.1 - BRAND: WEG;

1.1.3.2.2 - MODEL: Three-phase, 115 / 200V, 400Hz, rated power of 90 kVA, with overload capacity of up to 125%, to guarantee a steady supply of energy 400Hz;

1.1.3.2.3 - OTHER-INFORMATION: CONSULT THE ALTERNATOR MANUAL THAT CAME WITH IT

1.1.4 - TECHNICAL INFORMATION ASSEMBLY

1.1.4.1 - DIMENSIONS: 340cm long x 180cm wide x 180 cm height.

1.1.4.2 - APPROXIMATE WEIGHT: 2,010 kg.

1.2 - SPECIFICATIONS OF OUTPUT CABLES.

1.2.1 - OUTPUT 115V, 400Hz, three-phase, 4-wire with Y, with neutral:

CABLE 4 x 70mm² + 4 x 2,5mm², length of 10 meters, with plug R67BS, aeronautical standard for 115V 400Hz, PN115.01.6301.

1.2.2 - 28VDC output (When equipped with this option):

Cable with anti-friction protection, gauge 2 x 95mm2, with a length of eight (8) meters and plug R65BS, aeronautical standard for 28VDC PN 28.00.1139.

1.3 - PANELS AND FRONT PARTS

1.3.1 - EQUIPMENT PANEL

It is placed at the back, with access through a window in the door protected by a tempered glass on the top and open at the bottom side, which contains the following parts:

1.3.1.1 - HOUR METER INDICATOR

It indicates the hours of Diesel engine operation. The operating time display is important for maintaining the diesel engine. Refer to the manufacturer's manual for how to do oil changes, filters, cleaning, etc. Browse respect the limits indicated for longer service life of the engine (oil change every 400 hours).

1.3.1.2 - OIL PRESSURE INDICATOR.

Indicates the engine oil pressure through analog instrument. If during operation of the engine the pressure falls below the minimum limit the engine is automatically switched off and should only be turned on after correcting the fault.

1.3.1.3 - WATER TEMPERATURE INDICATOR

It indicates the water temperature in degrees Centigrade, via analog instrument. If during operation of the motor temperature rises up to 90% of the ceiling the engine is automatically switched off and should only be turned on after correcting the fault.

1.3.1.4 - FUEL LEVEL INDICATOR (DIESEL)

Indicates analog instrument through the approximate level of existing diesel oil in the fuel tank. Always refuel indicating above ¼ to avoid automatic shutdown for lack of fuel. Stay tuned to the firing of a yellow LED high brightness, "Attention: Low fuel" and Giroflex, signaling the low level when entering the reserve. At the end of the booking occurs automatic shutdown for lack of fuel. 315 liter tank capacity. Use Diesel S10 forever, if possible.

1.3.1.5 - DIGITAL AMMETER 0-500A / 5A:

Indicates the current supplied to the aircraft on the outputs of 115V.

1.3.1.6 - DIGITAL VOLTMETER 0-300VAC

Indicates the voltage phase / neutral at the generator output, the existing 115V output cable.

1.3.1.7 - DIGITAL FREQUENCY 0-999Hz

It indicates the frequency of the output voltage of the generator.

1.3.1.8 - DIGITALVOLTMETER 0-99,9VDC

Indicates the output voltage, existing at 28VDC output cable.

1.3.1.9 - DIGITAL AMMETER 0-2500A

Indicates the current supplied to the aircraft in 28VDC output.

1.3.1.10 - FAULT INDICATORS.

There are nine LEDs, and the first six indicate overfrequency, underfrequency, overload, overvoltage, undervoltage and overspeed.
The other three indicate motor quantities, and Battery Level, Low Oil Pressure and High Engine Temperature. There is a protection that switches the engine off automatically in case of low oil pressure, high engine temperature and fuel shortage, protecting the engine from air intake and damage.

1.3.1.11 - SWITCH PANEL LIGHTING

It allows on and off the LED lighting panel and analog instruments source for night operation. The lighting also serves to the inside of the panel.

1.3.1.12 - SWITCH INTERNAL LIGHTING

It allows on and off the lighting of the interior of the source, for nightly maintenance.
IMPORTANT: do not leave on for many hours without running the engine. Discharges the battery.

1.3.1.13 - SWITCH CIRCUIT FLASHER

Lets you connect and disconnect external flashlights flasher track alert.
Note .: The parking lights are LED. Do not use incandescent lamps. The circuit flasher is electronic and supports only the LED's current, but it is not damaged if you try to put lights, just do not light up.

1.3.1.14 - PUSHBUTTON FOR START

When pressed connects the 12V control supply circuit, triggers the starter and after the motor is spinning starts the automatic cycle that does everything you need for its operation. A green LED, "Motor On", placed above this pushbutton indicates that the engine is running and spinning (stationary does not light). When you need to connect the 12V circuit to display instruments, etc., give a quick tap in his buttonhole, the circuit connects without cranking the engine. When pressed resets the protection circuit and turn on the fault indicator LEDs 9, testing them. When pressed with the engine running it does not trigger the starter.

1.3.1.15 - PUSHBUTTON TO STOP ENGINE

When pressed initiates the automatic cycle shutdown by turning off the generator and outputs 115VAC and 28VDC, if they are linked, and keeping the engine at idle for 3 minutes. A Red LED, "Turning", placed above this pushbutton indicates (flashing) that is in automatic shutdown process. After this time, the circuit cuts the throttle immediately stopping the engine. Also off the circuit 12VDC, and resets the protective circuit that shuts down the engine in case of lack of engine oil pressure or Diesel and overheating.

1.3.1.16 - SWITCH TO CONNECT 115VAC OUTPUT.

Let it always on when in normal operation. If when connecting the aircraft it does not accept to be energized, press the lever up and leave it in the "ON" position. Above this key LED indicates the contactor on and fueling the aircraft.

1.3.1.17 - OUTPUT VOLTAGE ADJUSTMENT.

It provides a fine adjustment of the output voltage. It must be set to 115V.
Caution: If 28VDC output is indicating 29,3V the 115VAC is correct.

1.3.1.18 - SET FREQUENCY (only with engine speed analog controller).

With the digital regulator of rotation frequency is fixed at 400Hz.

1.3.1.19 - EMERGENCY PUSHBUTTON.

Pressing this pushbutton switches off everything at once. Only power by this pushbutton if you want to stop the engine immediately. It is recommended to leave the engine idling for a few minutes, to cool the turbine, preventing stagnant oil inside stay at very high temperature, charring on its axis.

1.3.1.20 - PUSHBUTTON TO TURN “ON” THE OUTPUT 28 VDC

When pressed energizes the contactor which connects the GPU 28VDC to feed the cable that provides for 28VDC aircraft. (Lights an LED "28VDC").

1.3.1.21 - PUSHBUTTON TO TURN “OFF’ THE OUTPUT 28 VDC

When pressed off the contactor that connects the GPU 28VDC to 28VDC interrupt the supply of direct current to the aircraft.

1.3.2 - OTHER INFORMATION

1.3.2.1 - EQUIPMENT OPERATING SEQUENCE

The push buttons for the command source were placed so that facilitate operation.
To place the GPU in operation should first check the radiator water level, engine oil level and Diesel oil level (to know Diesel oil level take a quick tap on the starting pushbutton to turn on the circuit 12 volts, passing the instrument to indicate the tank level).

1.3.2.2 - INFORMATION USE AS GENERATOR.

This source can also be used as a mobile generator to provide electricity for special GPU's with input 115 / 200V, 400Hz and 28VDC output.
To this end the installation of a special socket (optional) to output three-phase 115 / 200VAC, 400Hz is required.

SECTION 02 - OPERATING INSTRUCTIONS

1.1 - STARTING AND MAINTENANCE IN AN AIRCRAFT:

1 - Keep the Diesel oil tank stocked, check the oil level of the engine, keep your tires inflated (35-50 pounds. The tire pressure must not be too high, because the air tire is running as suspension) keep output cables properly accommodated in the side doors, cables, to be undamaged the drive source.

2 -Turn on the flasher and towing the "JET-POWER DIESEL 90" up to about 5 meters from the power input jack for external power supply of the aircraft.

3 -Unroll the corresponding output cable.

4 -Do the procedure for operation:

-Press the green pushbutton (Diesel engine START) during the time required for starting the engine. (cold warm up before starting);

-After a little time to warm up the engine and stabilize the rotation at idle, begins the process of gradual acceleration, where the motor accelerates slowly with little smoke emission. When it reaches normal speed, the generator is turned on and is ready to meet aircraft, all automatically;

-Set The voltage and frequency if necessary (115VAC and 400Hz);

-Connect The output from 115V and / or 28V the aircraft;

-Call The 115V output of key if the 115V output is used. On some aircraft may require a key tap the top position. If the output of 28VDC is used, use the green pushbutton to turn on and adjust the output voltage in the knob "VOLTAGE ADJUST" from 115VAC, if necessary (A 28VDC output is proportional to the 115VAC. When indicates 115VAC to DC voltage is 29,3V, right to use);

-The Protection circuit will be connected by monitoring the electrical parameters only when connected to the aircraft. But in protection circuit failure of the GPU can be used simply to check your operator and set the next voltage 115V and the next frequency of 400Hz. The aircraft accepts a slight variation smoothly. When the circuit fails, the six LEDs above Flashes. To stop flashing press the pushbutton "START";

-Use The buttonhole "START" to test the led'se to reset the fault protection circuit. When pressed with the engine running it does not trigger the starter. (The emergency pushbutton resets the auto power off).

5 -Keep connected as long as it takes. Note the instruments from time to time, to know tanklevel, output voltage, frequency, etc. If the output voltage and frequency are not suitable to adjust the panel.

6 -After use press the red pushbutton "STOP" to turn off all automatically.

7 - Turn off the aircraft out cable and wrap it firmly within the port cable, lest he fall on the way back from the source to where it is parked.

8 - Return the power to the place of origin and disconnect the flasher.

NOTE: The frequency control and voltage is automatic. Existing settings on the panel, are fine-tuning where you can set the desired values without opening the panel for internal regulation.

When equipped with digital speed regulator, has no fine-tuning on the panel.

SECTION 03 – TROUBLESHOOTING SOLUTIONS

Following is a list of symptoms and possible causes that may preclude or compromise the operation of the equipment. Always remember that the instructions should be followed properly for avoiding problems in operating the equipment.

Realizing abnormalities, first follow the steps listed in the next sheet. If the problem persists, call our Technical Department and ask more detailed information or direct assistance from the factory.

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The listed defects are only the most likely to happen.

3.1 - NOTES

A) Do not use circuit breakers above specifications, because it alters the circuit protection.

B) Avoid getting unnecessarily opening the door of the instrument panel.

C) Always make a Diesel engine maintenance as indicated in the engine manual.

D) Defects in the diesel engine see engine manual that came with it.

E) Defects in the alternator, see the alternator manual that came with the equipment.

3.2 - POSSIBLE DEFECTS

A) When starting the engine he did not "catch" he insisted.

CAUSE: Diesel oil is not good. Speed control board without power.

PROOF: -. If the tank is filled.

- If you have voltage on the 12V input of the speed control board.
- If you are unarmed breakers.
- If you entered the air supply system.
- If the transfer pump is working.
- If the injection pump is working.
- Incorrect setting START FUEL (page 26)
- If you have defective sensors, causing shutdown.
- If the ambient temperature is too low, install the kit for low temperatures.

- Press the emergency pushbutton to reset if stopped for lack of fuel.

B) When starting the engine he "gets", but is only idling.

CAUSE: Low speed at idle. Alternator (14V) of the motor does not generate.

PROOF: -. If the LED "Battery Power" is illuminated.

If it is, try to speed up a little more to erase. To accelerate the idling turn the trimpot "Idle" in the analog speed control board or change the programming in digital.
Is accelerating even more it does not generate, check the alternator. The system need the D + signal from the alternator to start the normal acceleration.

C) When connecting the ammeter 115V and 28V source not indicate current.

CAUSE: It is normal not indicate because only indicates whether you are providing current to the aircraft or to the load of 28VDC transformer.

PROOF: -. If the output cable is properly connected to the aircraft.

- If you load connected to the aircraft.
- If the voltmeter indicates voltage.

D) By connecting the green buttonhole of the 28V circuit, the voltmeter does not indicate tension.

CAUSE: Lack of connecting the generator, power failure or defect in the transformer instrument.
CHECK: If the source is properly connected and running at normal speed.

Has disarmed breakers (inside the box on the back).
If you have any problems with relay inside the panel box.
If you have loose wires in small contactor or the buttonholes.
If defective instrument (may indicate wrong or erased value) do not leave the dead source.
Can be used normally. Indicate 115VAC to 28VDC output voltage is correct.

E) 28VDC output voltage to 20-22 Volts. (Loaded up to 10A)

CAUSE: Lack of one phase transformer.

CHECK: Circuit breaker with partial shutdown.

F) 115VAC and 28VDC outputs above or below normal.

CAUSE: Incorrect setting of the output voltage.

CHECK: If the engine speed is normal (next frequency to 400Hz).

If the rotation is right and the output voltage is incorrect adjust the potentiometer on the panel. A good fit is to output 29,3VDC. When is set this pot changes the alternating voltage supplied by the alternator. With output of 29.3 VDC, the generator voltage is 115V.
If you can not adjust the tension in the pot do the adjustment as described in section 6. If you can not adjust it may be necessary to change the voltage regulator. Use a reliable multimeter and check the tension of the two instruments. Due to Diesel engine vibration is not a perfect fit for long. To adjust the tools, open the panel (remove the 2 screws) put the probes in low terminals (2 above are for power 115VAC, 400Hz). Remove the outer cover of the instrument, forcing out with a small screwdriver and adjust the "trimpot" internal order to have the same reading of a good instrument. To adjust the output voltage, set the voltage adjustment potentiometer on the panel in its central position. The voltage regulator (bottom right) adjust the trimpot "Vad" to indicate 115VAC in digital voltmeter already measured.
Please note: Digital Multimeters usually measure less in 400Hz (approx 108V correspond to 115V in above 200V scales.).

G) 115VAC output with frequency above or below normal.

CAUSE: incorrect frequency adjustment (engine speed).

CHECK: The frequency depends directly on the engine speed.

If the engine speed is not normal, the frequency also is not. If is not normal, attempt to adjust the "Digital Speed Control Unit ". Check adjustments as described in section 6.

If you cannot adjust, it may be necessary to change the filters of diesel oil or air filter.

Very dirty air filter, diesel oil supply problems in the injection pump or other engine defects can cause the electronic circuit speed control cannot make the correct speed is reached. With digital controller this setting does not exist in the panel and is done in software. It is important not to change the number of teeth of the rack. The Iveco engine has 125 teeth.

H) 63A circuit breaker connected after disarming the device.

CAUSE: internal or external short circuit 28VDC output rectifiers or shorted.

CHECK: If the 28VDC output jack is normal. If it is, the more likely that one or more rectifiers have entered into a short circuit. To test them do as indicated below:

1 - Open the unit cover giving access to the transformer.
2 - Measure the resistance between positive and negative (normal 8.2 ohm). If near zero rectifier is short-circuited.
3 - Loosen the six terminals of the rectifiers.
4 - With a “multimeter”, test the rectifiers (one by one).
5 - Replace (s) that is (are) shorted.
6 - Use a ridge 24mm wrench to loosen the damaged diode.
7 - Use rectifiers Semikron SKR240 / 04 or other with thread 3/4 ", UNF.
8 - After exchange (s) tighten everything firmly, without exaggeration.
9 - Reset circuit breaker.

J) Output voltage ranging between approximately 20 and 28 volts.

CAUSE: Bad-contact in any of the power phases.

CHECK: Do as indicated in item C (default is flashing).

K) Output voltage above 38Volts approximately 115V with the entry.

CAUSE: Resistor 8R2, 200W open or interrupted your connection.

CHECK: Check connections and replace it if it is open.
To consume small harmonic currents is using this resistor.
Their lack is growing tension, but with little load capacity. In normal use the load itself already limits this voltage.

L) Output 28V with voltage dropping below 22 Volts, the peak current of the match.

CAUSE: Rotation drop in engine load or over capacity.
Output cable with high voltage drop.

CHECK: If you did not fall much rotation under load.
If the match early voltage is not too low (ideally 30,5VDC)
If the load is above its capacity.
One is the normal speed compensating control load in the diesel engine.
If you are not ending the diesel oil tank.
If the motor is defective and lost strength.
If the output cable is bad. (good tension in the GPU and lower the aircraft, with charge).

M) Defects in the motor and generator (see the manufacturer's manual).

SECTION 04 - INSPECTIONS, CHECKS AND LUBRICATION.

- Make Diesel engine maintenance as indicated in the manufacturer's manual, with reference to the sections listed below:

Daily maintenance or refueling:

• Lubricant Engine oil level;
• Coolant level engine - Verification and Maintenance (Add antifreeze if necessary);
• Cooling Fan - Inspect;
• Drive belt - Inspect;
• Fuel water separator - Drain

Maintenance every 400 hours or three months (whichever comes first):

• Lubricating oil - Change;
• Lubricating oil filter - Replace;
• Air filter restriction - Checking and maintenance. Replace if necessary;
• Battery - Inspect;
• Status of Diesel oil and water hoses - Inspect;

Maintenance every 800 hours or 6 months (whichever comes first):

• All the 400 hours review;
• Fuel Filters - Replace both.

Maintenance every 1200 hours or 1 year (whichever comes first):

• All of the review of 400 and 800 hours;
• Adjustment of head valves

Maintenance every 2000 hours or 2 years (whichever comes first):

• All the review 400, 800 and 1200 hours;
• Adjustment of head valves - Set

- Maintain the generator as shown in the manufacturer's manual. (Normally there is no need maintenance. Only after 10,000 hours or 10 years, change the SKF bearing).

- Always keep stocked the diesel oil tank;

- Monthly complete the 12V battery level with distilled water (common battery);

- Weekly gauge tires (45 pounds). Do not use very high pressures in the tires, because the GPU has no suspension and utilizes the low tire pressure to compensate for the imperfections of the track without much twisting the chassis. In good tread can use up to 50 pounds.

- Never use solid tires, on pain of splitting its structure, losing the guarantee (only GPU's with leaf springs is that it can be used).

- Use tires with tube 600 X 9 ";

- Periodically check the tightness of the bolts Allen pins of plug's R65BS (28V) and R67BS (115V) of the output cables from the source. (Once a month, using Allen key 5/32 ");

- There is no need of any inspection, verification or lubrication in the electrical part of the source, except when defective during use;

- Every six months lubricate the wheels with common grease and the central vertical direction bushing with lithium grease.

- Monthly or whenever necessary, rinse with water jet the inside of the radiator because the accumulation of dirt thrown by Helix Wind is very large and compromises the cooling of the engine. This GPU oil does not accumulate in the radiator due to depletion of oil vapors system that maintains always dry radiator, not clogging the fins.

SECTION 05 - INSTALLATION AND REMOVAL.

5.1 - INSTALLATION.

To put into operation put premium Valvoline Oil 15W40 Blue (10 liters) in the engine. Water and antifreeze fluid in the radiator and fill at least 100 liters of diesel (315 liters tank capacity) and connect the battery.

The GPU is supplied without engine oil, water in the radiator and fuel and the battery disconnected or out of battery by country (use 12V 150Ah battery).

To use check the engine oil level, radiator water, fuel tank and test it.

5.2 - REMOVAL.

To remove the equipment where it is installed, roll out cables, and place them in the cable tray. Transportation towed only for short distances on land without many irregularities. For longer distances use a plank truck or in open or closed body trucks. Lock the brakes on the vehicle by placing the move handle upright and tie the wheels. Use a plank truck to load the truck opened or closed bodywork.

SECTION 06 - ADJUSTMENTS AND TESTING.

6.1 - ADJUSTMENTS.

6.1.1 - OUTPUT VOLTAGE ADJUSTMENT.

If the speed (frequency) is right and the output voltage is wrong, failing to regulate it in the panel shall be made as internal adjustment:

Place the tension adjustment on the panel in its central position. Open the panel cover and the voltage regulator (bottom right) adjust the trimpot "Vad" to indicate 115VAC (or 29,3VDC with 28VDC output on). This board is a square, resinous, which is in the panel box of background, bottom right. The adjustment trimpot is the top right. Protection for under- or overvoltage only acts linked with the aircraft, disrupting the power supply without turning off the motor or alternator. If the voltage adjusted within acceptable limits the supply is restored.

6.1.2 - DIESEL ENGINE SPEED ADJUSTMENT (Frequency).

Open the panel cover, remove the two screws that hold the panel and open it. Basically, the lower right corner is located a plate with black box, the digital loop speed control. The frequency (1847rpm) is set in the regulator and is related to the number of teeth on the rack (125 Iveco, 127 Cummins). If the speed (frequency) are adjusted properly and are not sure you need to check the mechanical part. To view or adjust do with the GPU running with the connected generator. If you can not adjust the rotation may be defective indication of the diesel engine, or dirty filters, which are the engine does not reach the required speed (1847RPM). The "IDLE" is set at 900 revolutions per minute. Do not set in rotation below that necessary for the 12V alternator still charge the battery. The battery charge light must be off at idle. The lever of the injection pump throttle must be locked in their position of maximum acceleration, to get correct automatic control.

6.1.3 -MEASURING THE DIGITAL INSTRUMENTS.

With a good digital instrument that measures voltage and current at 400Hz measure the digital instrument is very easy:

Open the outer cover of the instrument out, forcing it out, below, with a small screwdriver. Make the measurement with your instrument and adjust the trimpot to the front to indicate the same. For the frequency is better compared to another digital instrument (multimeter). The best place to connect the test leads are in plug's. To have tension you need to be connected. The 28V just call the green buttonhole. The 115V is the only force 115V output switch up, which will stress the 115V plug.

6.1.4 - CONTROL BOARD ADJUSTMENTS GPU PN 115.01.1037

(See Trimmers position of the design after the instructions.)

6.1.4.1 - TRIMPOT 1 - TIME SETTING TO TURN “ON” THE GENERATOR:

Must be set to turn on the generator only after the engine reaches normal rotation, or a few seconds later. Push to increase the time or unscrew to decrease. If connecting the generator idling, the excitation current can be very high, which may damage the board voltage regulator.

6.1.4.2 - TRIMPOT 2 – TIME SETTING OF THE FINAL IDLE:

Must be set to a time of approximately three minutes idling, for engine turbine cooling. It may be less or more, according to the local temperature. Push to increase the time or unscrew to decrease.

6.1.4.3 - TRIMPOT 3 – TIME SETTING THE INITIAL IDLE:

Should be set to a preheating before the engine reaches normal rotation, can be immediately or after a few seconds. You can leave around 10 seconds or longer in the cold season. Push to increase the time or unscrew to decrease.

6.1.4.4 - TRIMPOT 4 - LOW FUEL LEVEL ADJUSTMENTS:

Should be adjusted to the yellow LED and the Giroflex light when the fuel gauge reaches the red band, indicating that arrived on the reservation. Press to increase the level or unscrew to decrease.

6.1.4.5 - TRIMPOT 5 - SETTING THE AUTOMATIC SHUTDOWN FOR LACK OF FUEL:

It should be set to when the fuel gauge reaches the end of the red band GPU hang up, and before entering air in the system. Press to increase the level or unscrew to decrease. The setting here changes the LED lighting setting low in proportion. If necessary retouch it.

6.1.4.6 - BOARD SIGNAL LEDS:

Light indicating the operation of his office as drawing following the instructions.

6.1.4.7 - JUMPER ON THE BOARD:

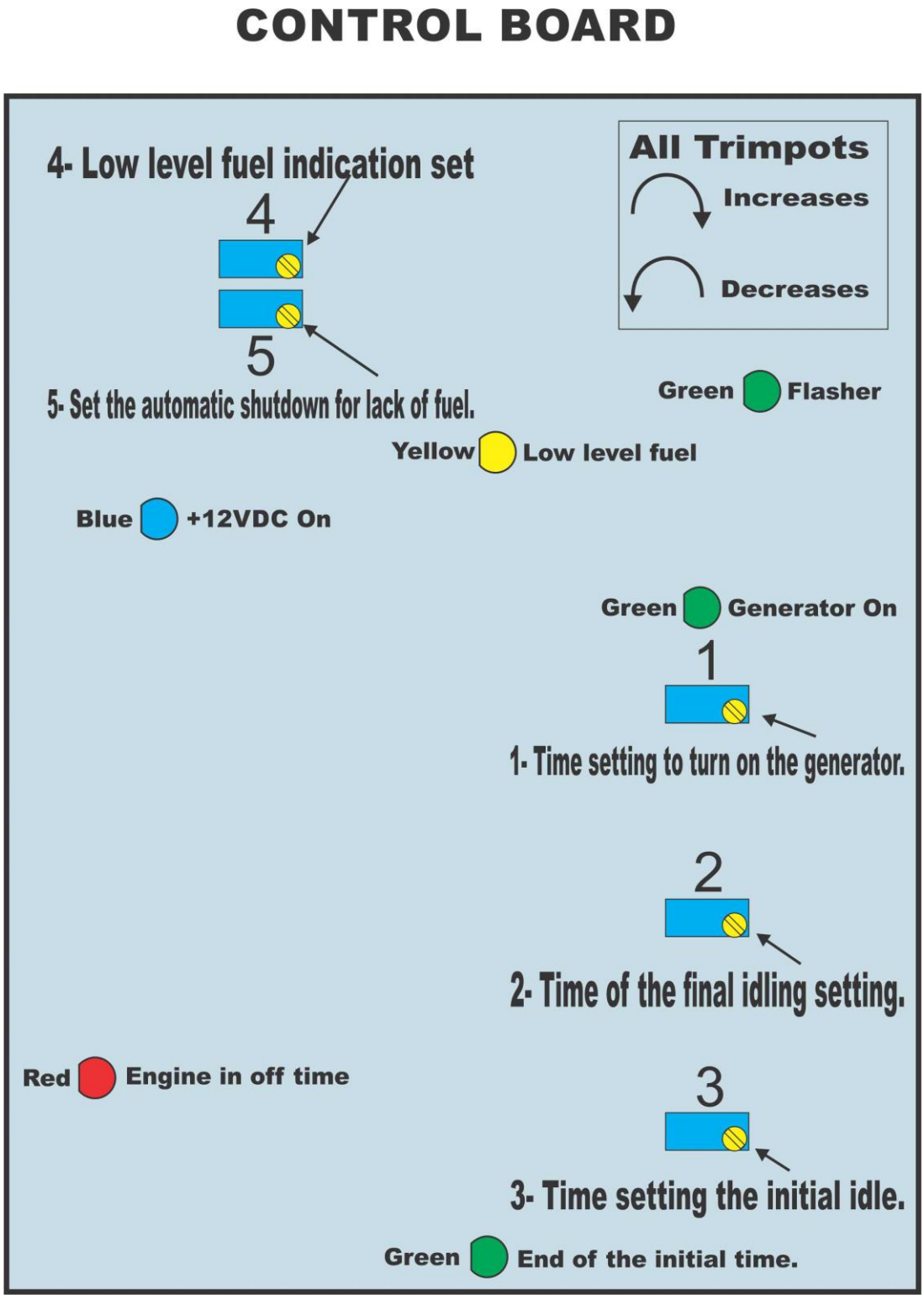
It is located right above the large connector. Its function is to enable the connection of a GIROFLEX, the GPU ceiling, to signal the Low Fuel Level:
Jumper cut when without Giroflex and when connected to the Giroflex.

6.1.5 -DIESEL ENGINE SETTINGS (SEE YOUR MANUAL).

6.1.6 - ALTERNATOR SETTINGS (SEE YOUR MANUAL).

6.1.7 – GENERAL CONTROL BOARD (2014/2015) PN 115.01.1037 REV. 02 FEB.2014:

Situated in behind the panel in vertical position.



6.1.8 – EDG5500 –ELECTRONIC DIGITAL GOVERNOR (GPU ALL ENGINE 2014/2015):

DIGITAL REGULATOR ASSEMBLY SPEED:

The EDG5500 speed regulator is robust enough to be placed in an electrical panel. To prevent the speed governor has contact with water mist or condensation, the controller is mounted vertically, this allows the fluid to drain. Extreme heat should be avoided.

ADJUSTMENT OF THE SPEED SENSOR (PICK-UP)

With the engine, adjust the space between the speed sensor and the number of teeth of the rack. The space shall be not less than 0,020pol (0.45mm). Normally, you will achieve a satisfactory air gap retreating the speed sensor in 3/4 turn after touching the teeth of the rack. Tension speed sensor must be at least 1V RMS AC during the match.

A USER INTERFACE:

THE DISPLAY AND BUTTONS

The EDG5500 have a user interface. All settings are made using the LCD and five buttons - COLUMN three buttons, an arrow UP button, DOWN ARROW button. See CHART 1.

LOCKING AND UNLOCKING EDG DISPLAY.

To unlock and enable the display, press and hold simultaneously for 2 seconds the UP ARROW and DOWN ARROW buttons. The LOCKED indicator will be off. The display block is performed by performing the same operation. If LOCKED parameter is ON, the display will lock after 5 minutes without use.

QUIKSET MENUS, AND ADVANCED SPECIAL

The EDG5500 has three configuration menus: Quikset, Special and Advanced. We changed only the Quickset menu. All parameter settings are made using the LCD and five buttons - COLUMN three buttons, an arrow UP button, DOWN ARROW button. See CHART 1.

MENU QUIKSET

This menu is designed to be the most frequently used parameters. It is used the method patented Quikset to select and modify these parameters.

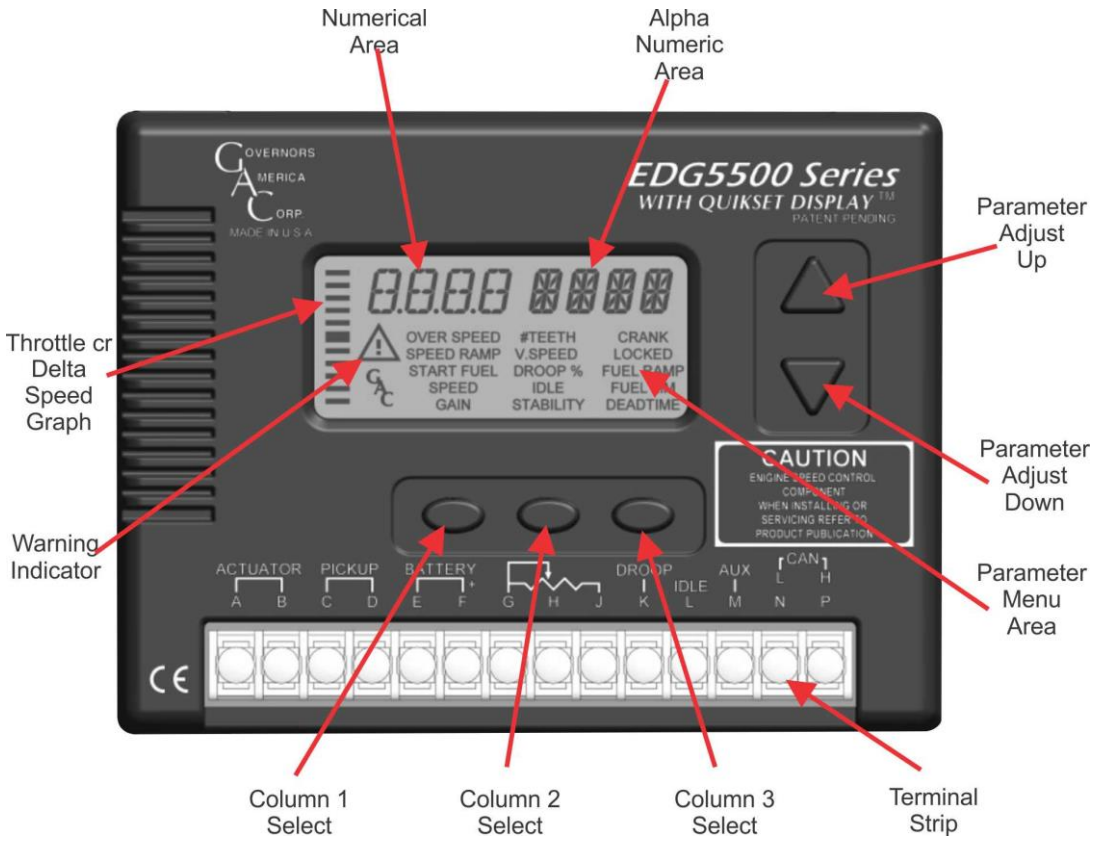
VIEW / CHANGE PARAMETERS QUIKSET:

All "Quikset parameters" are displayed on the LCD in five rows of three parameters on each line. The active line is indicated by the parameters in the line being displayed. To select the next line, press any button COLUMN, cyclic and continuous, and will cover all lines.

To view the value of a parameter in the current row, press and hold the button under the COLUMN parameter.

To change the value of this parameter, while holding the COLUMN button, press the UP ARROW button to increase the value, or press the down arrow button to decrease the value. COLUMN release the button to return to normal view.

CHART 1 - USER INTERFACE



RUNNING THE ENGINE

Starting the Diesel Engine

Start the engine by applying DC power on the speed regulator. The actuator is positioned at the level set by the START FUEL parameter. Already FUEL RAMP parameter will control the fuel rate to start the engine.

If the engine is unstable after starting, set the parameters:

GAIN, STABILITY and DEADTIME until the engine is stable.

Speed regulator performance

Once the engine is in operation and no-load speed, the speed regulator performance tuning can be done.

Basic parameters

The following basic parameters, at least, they are defined (see parameters "Menu Quikset" for more details):

- #TEETH (number of teeth of the rack (Cummins Engine 127 teeth and 125 teeth Iveco).
- CRANK (set the end of the boot in RPM at 400rpm).
- SPEED (set the nominal speed in RPM which is 1847RPM).

Using the keyboard and the LCD:

- The numeric area displays the value of a selected parameter or parameter running. The alphanumeric area displays the units for the parameter (for example, 1847 rpm).

- When executed, the EDG, by default, displays the engine RPM in the alphanumeric area and a bar graph will represent the throttle position. It can switch this view by pressing ARROW UP OR DOWN ARROW, see the table in Real-time preview on the next page.

- If the EDG monitor is locked, it can be unlocked by simultaneously pressing and holding the UP ARROW and DOWN ARROW buttons for 2 seconds. The LOCKED indicator will be off.

A. Increase the GAIN parameter in "Quikset Menu" to develop instability. Gradually decrease the GAIN until the return of stability. If not stabilize, let set at 50.

B. Increase the STABILITY parameter in "Quikset Menu" to develop instability. Gradually decrease the STABILITY to the return of stability. If not stabilize, let set at 50.

C. Increase the DEADTIME parameter (compensation) in the "Quikset Menu" to develop instability. Gradually decrease the DEADTIME to the return of stability.

D. The settings of parameters GAIN, STABILITY and DEADTIME may require minor changes after the motor load is applied. Typically, adjustments unloaded reach a satisfactory performance. A strip chart recorder (oscillographic) can be used to further refine the settings. Normally leave the standards listed in the table.

If instability can not be corrected or more needed performance improvements, see below the TROUBLESHOOTING section. In this section, the information can be found regarding the procedures for troubleshooting.

ADDITIONAL RESOURCES

REAL-TIME PREVIEW

While the engine is running, the EDG displays measured values in real time in the main display and a bar graph. There are three different screens (see table below). Pressing the UP ARROW or DOWN ARROW to cyclical change between screens.

OVERSPEED - ON SPEED

When the EDG5500 detects that the engine reaches the speed specified by OVERSPEED parameter, the EDG will command the speed to 0 RPM and will set 0V at the gateway to the

actuator. OVERSPEED is a parameter of the "Menu Quikset" and is expressed in RPM. Note: If the number of teeth entered is incorrect, the OVERSPEED setting may not be what you want.

If the engine operating speed reaches the OVERSPEED adjustment while the engine is running, the EDG will lead to the actuator reduces the fuel to zero and stop trying to control the motor.

Once the EDG detect a speeding, the display will flash the RPM, along with warning and OVERSPEED indicators. No parameters can be changed. To reactivate the EDG, you must turn off and on the GPU.

DROOP is usually used for the parallel generator and is not used.

SPEED SENSOR SENSING LOSS

If the EDG5500 is commanding the actuator to move and does not detect the input speed sensor, EDG will set 0V at the actuator output and controlling the speed to 0 rpm.

Once the EDG detect loss of sensing pick-up, the display will flash the RPM along with the indicator warning. No parameters can be changed.

PARAMETERS MENU QUIKSET IN NORMAL OPERATION

OVERSPEED: 2220 RPM	#TEETH: 125	CRANCK: 400 RPM
SPEED RAMP: 125	V. SPEED: 20	LOCKED: ON
START FUEL: 99%	DROOP%: 5,0%	FUEL RAMP: 2%
SPEED: 1847	IDLE: 900 RPM	FUEL LIM: 99%
GAIN: 40	STABILITY: 40	DEAD TIME: 3

INSUFFICIENT SIGNAL MAGNETIC SENSOR

A strong signal of the magnetic sensor will eliminate the possibility of missed or extra pulses. The speed regulator will regulate properly with signal 0.5V AC RMS. A signal of 1V RMS AC or greater than a rotating speed is recommended. Measure the signal at the terminals C and D. the shield wires of the speed sensor is recommended.

The amplitude of the sensor signal speed can be increased by reducing the distance between the tip of the speed sensor and the engine ring gear. The difference should be no less than 0.45mm. To achieve a satisfactory air space, with the engine stopped, turn the speed sensor until it touches the gear tooth and then back out at 3/4 turn.

SECTION 07 - CLEANING AND PAINTING.

7.1 - CLEANING.

- Always keep your equipment clean and avoid placing tools on parts;
- Do not use plastic covers on the GPU, blocking its ventilation;
- For removal of foreign deposits in equipment such as grease, oil, etc., buff it with a thin wax polish.

7.2 - PAINTING.

- Avoid unnecessarily in the rain or in the sun GPU, to extend the life of the painting; The electrostatic original paint.

-To use new paint ink "Synthetic Enamel Extra Fast," in the same color of the equipment or you prefer.

SECTION 08 - WIRING DIAGRAM.

8.1 - INTERPRETATION OF CODES

EXAMPLE: Item M1 In a DESCRIPTION.
M1 115.02.6140 Stationary Iveco engine 4 cylinders NEF45 SM2.

- The group before the PN (M1) indicates the position of component in the schematic diagram.

- The first PN group consisting of 03 (three) digit identifies the product "SUPERSOM" (115 in the case of the JET-POWER DIESEL 115V, 400Hz).

- The second group, consisting of 02 (two) digits, identifies the type of piece, as this relationship:

00 - Part of electronic circuit;
01 - Part of electric circuit;
02 - Mechanical part;
03 - Part mounting boxes and finishing;
04 - Technical literature;
09 - Equipment.

- The four (4) following numbers indicate the numbering of the workpiece, within the series:

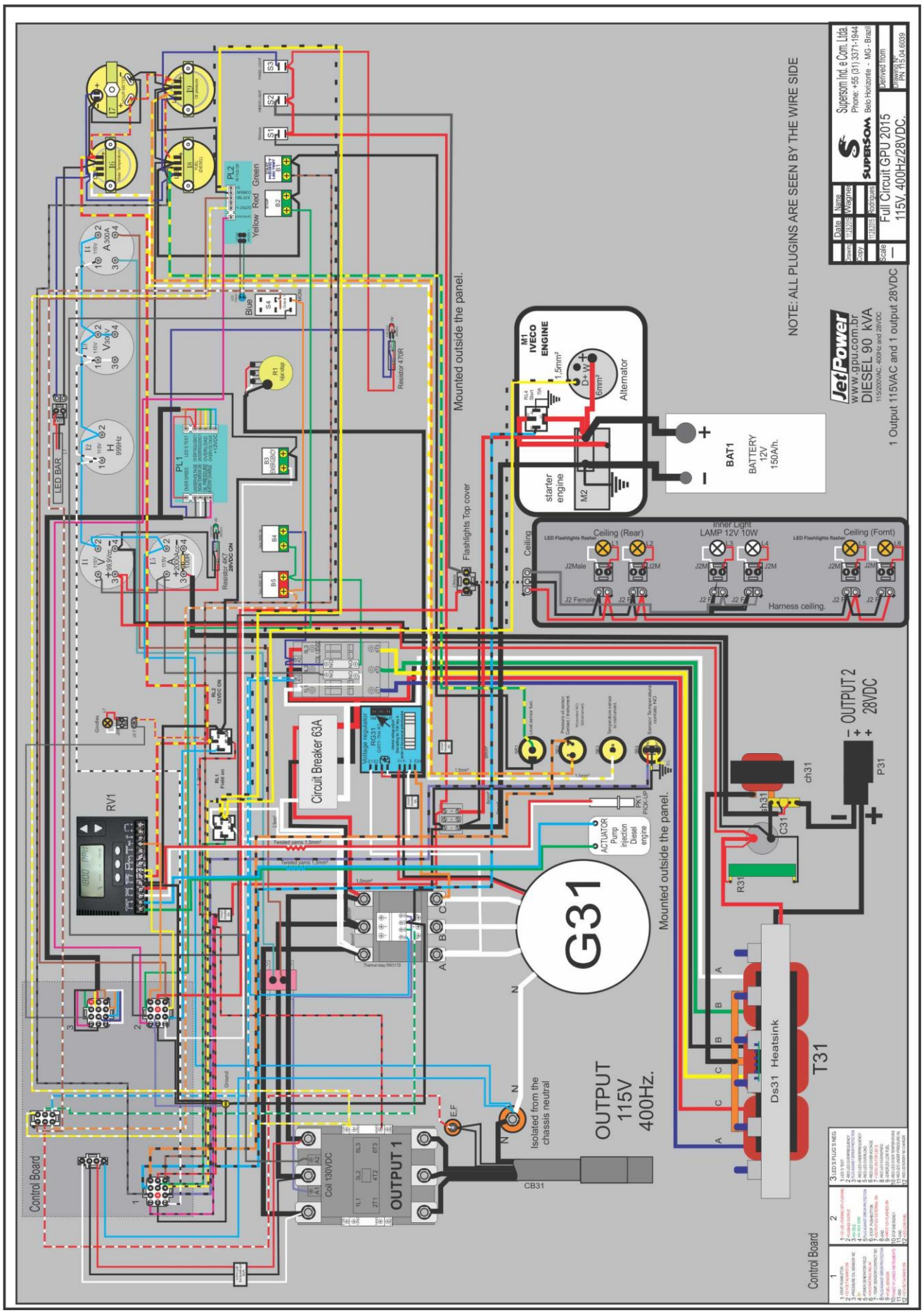
- Soon after comes the DESCRIPTION, with the manufacturer's name and part number.

8.2 - ELECTRICAL CIRCUIT AND COMPONENTS LIST OF "JET-POWER DIESEL".

Note.: In all the colors of the lines drawings do not exactly match the colors of the wires and cables. Can have different colors and striped.

For print quality, click here. (A0 FORMAT 841 x 1189mm).

8.2.1 - GENERAL CIRCUIT AND INTERIOR

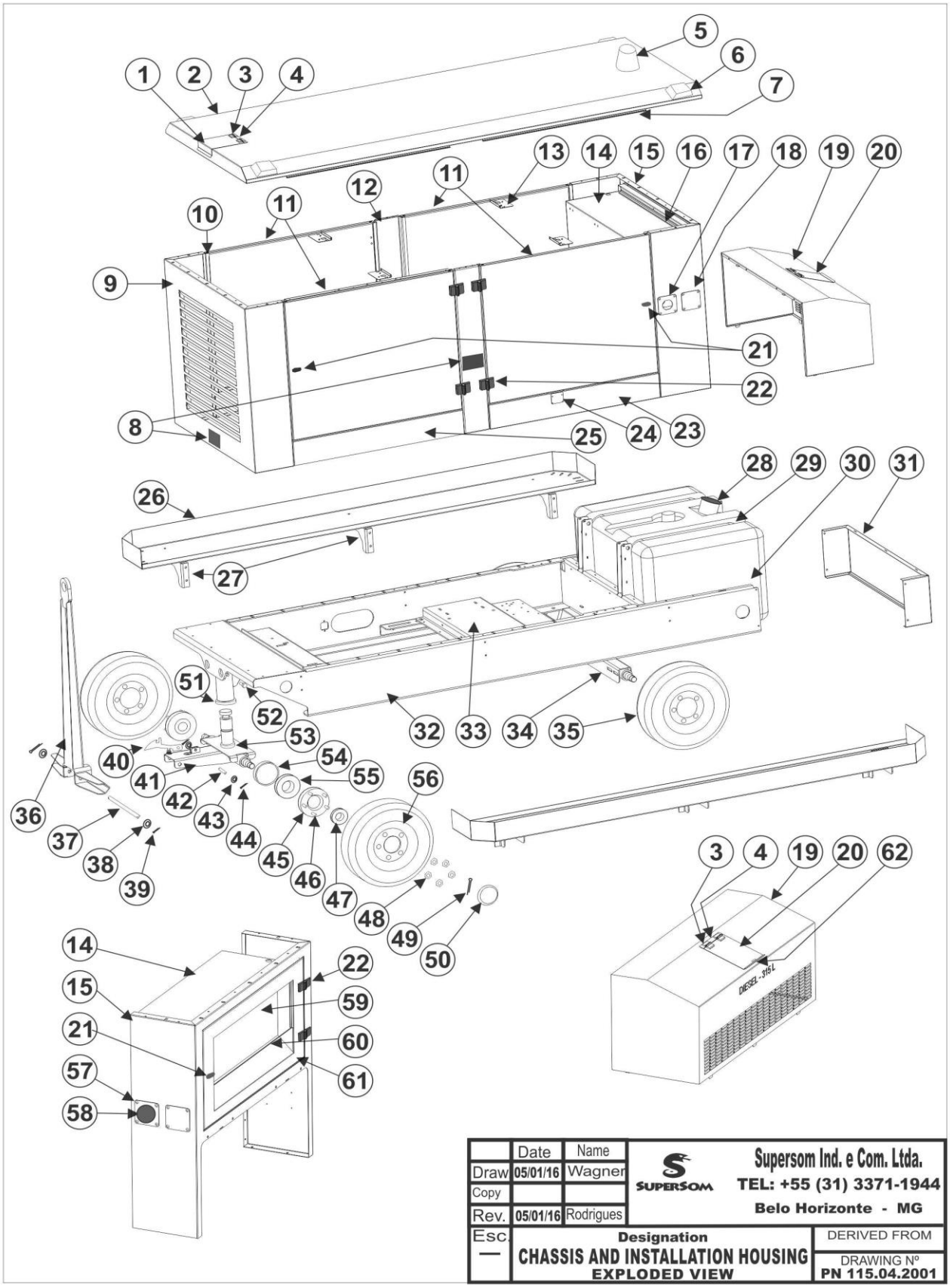


8.2.2 - DRAWING PARTS RATIO

Item	Part Number	Description
M1	115.02.6140	Stationary Iveco engine 4 cylinders NEF45 SM2.
M2	115.01.6117	Starting engine starter motor
BAT1	115.01.6716	Battery 12V 150A / h.
A1	115.01.9121	Alternator 14 VDC Iveco
L1, L2, L5, L6	115.01.6151	Flashlights external c / 12V lamp, LED.
L3, L3A, L4, L4A	115.01.6152	Internal lights lamp 12V, 10W, 1 pole
SR1	115.01.6170	Fuel level sensor (tanque315L)
SR2	115.01.9171	Pressure sensor oil Iveco
SR3	115.01.9172	Temperature sensor instrument Iveco
SR4	115.01.9173	Contact temperature sensor IN Iveco
AT1	115.01 6184	Actuator the injection pump engine Iveco
PK1	115.00.6186	Pick-up engine speed sensor
J1	115.01.6133	1 section connector
J2M	115.01.6631	2-pin connector, male
J3M	115.01.6290	3-pin connector, male
J4M	115.01.6134	4-pin connector, male
J6M	115.01.6135	6-pin connector, male
J12M	115.01.6139	12-pin connector, male
RV1	115.00.9210	Cruise control (frequency) digital.
MCP1	115.01.1037	Control module and protection
PL1	115.00.6010	Led's card red
PL2	115.00.1206	Led's plate lower
I1	115.01.6227	Digital voltmeter 0-99,9VDC
I2	115.01.6229	Digital frequency meter 0-999Hz
I3	115.01.6226	Digital voltmeter 0-300VAC
I4	115.00.6225	Digital ammeter 0-300A / 5A
I5	115.01.6228	Digital ammeter 0-2000A / 60mV
I6	115.01.6224	Temperature gauge hour meter
I7	115.01.6222	Hours indicator
I8	115.01.6223	Fuel level indicator
I9	115.01.6221	Oil pressure indicator
S1, S2, S3	115.01.6231	Lever switch MARGIRIUS, 10A
S4, S9	115.01.6232	Lever switch MARGIRIUS 10213 Special
DJ1, DJ2, DJ3	115.01.6241	Breaker monopolar 6A
DJ4	115.01.6244	Breaker monopolar 16A
DJ5	115.01.6242	Breaker pole 6A
F3, F4	115.01.6243	3AG fuse, 15A
RL1, RL2	115.01.6251	Relay 1 pole, 30A
L1	115.01.6258	Panel illumination LED's 12V strip.
R1	115.00.6271	Wire potentiometer 1K, 4W
B1, B4	115.01.6280	Pushbutton green 1 NO
B2	115.01.9281	Pushbutton red 1 NO
B3	115.01.9282	Pushbutton emergency 1 NO
B5	115.01.9283	Pushbutton red 1 NC
G31	115.01.6398	90KVA generator Weg, 115 / 200V, 400Hz
RG31	115.00.6320	Voltage regulator
RS31	115.01.6739	Overload relay Weg 200 / 320A
CT31	115.01.6350	Contactor Weg 180A, coil 130VDC

TC31	115.01.6360	Current transformer
CB31	115.01.6370	Output Cable 4 x 70mm² x 10metros.
P32	115.01.6301	115VAC output plug
T31	115.01.6410	70KVA transformer, 400Hz.
F41 to F43	115.00.6415	Fuse rapid 63A
DJ41	115.00.9415	Breaker pole 63A
CT41	115.01.6420	Contactor Weg 50A, coil 130VDC
D41 to D46	115.01.6426	Diode SKR240 / 04
C41 to C46	115.01.6428	Capacitor 100K, 250V
Ds31	115.01.6430	Heat sink diodes
Ch31	115.01.6440	High performance filter shock 2.4 kHz
Sh31	115.01.6441	Shunt 2000A / 60mV
C31	115.01.6470	Capacitor EPCOS 47000 uF x 40V
	115.01.6472	Support for the capacitor above
R31	115.01.6480	Resistor 8R2 , 200W
Cb31	115.01.6481	Cable 28VDC output, 8 meters, complete
P31	28.00.1139	28VDC output Plug

SECTION 09 - GENERAL PARTS LIST



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Rev.	05/01/16	Rodrigues	

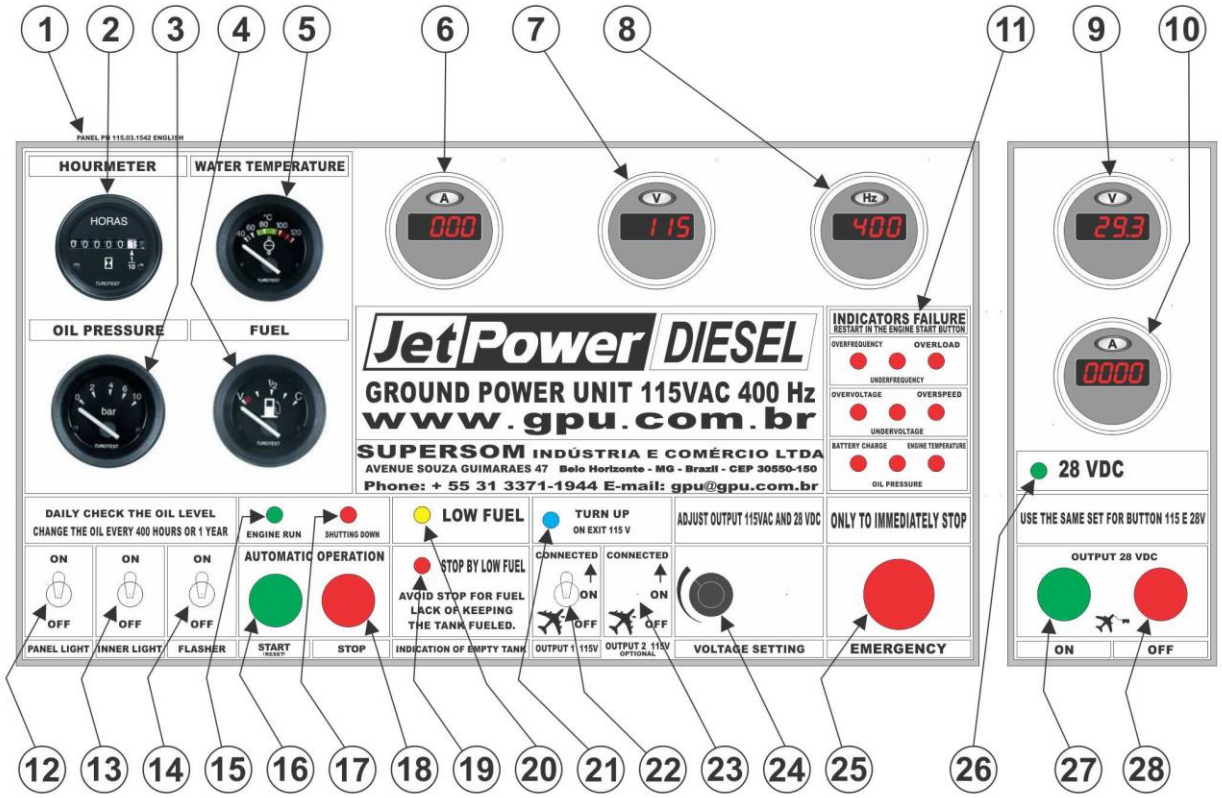
Esc.	Designation	DERIVED FROM
—	CHASSIS AND INSTALLATION HOUSING EXPLODED VIEW	DRAWING Nº PN 115.04.2001

Exploded View

item	Quant	PN/Nº	Description
1	1	115.03.1010	Water cover
2	1	115.03.1020	Top cover
3	4	115.03.1030	Small hinges
4	2	115.03.1040	Support hinges
5	1	115.03.1050	Rotary Indicator low fuel
6	4	115.03.1060	Flasher
7	4	115.03.1070	Angle ceiling
8	3	115.03.1080	Tire pressure plate
9	1	115.03.1090	Front fairing
10	1	115.03.1100	Rubber set of doors
11	4	115.03.1110	Side doors
12	2	115.03.1120	Central column
13	4	115.03.1130	Internal lighting fixture
14	1	115.03.1140	Control box
15	1	115.03.1150	Upper rear fairing
16	1	115.03.1160	Panel lighting support
17	1	115.03.1170	Output cable adapter 115V
18	1	115.03.1180	Blanking plate
19	1	115.03.1190	Fairing tank
20	2	115.03.1200	Cover supply
21	5	115.03.1210	Door lock
22	10	115.03.1220	Door hinge
23	2	115.03.1230	Lower fairing with hole
24	1	115.03.1240	Optional output cap
25	2	115.03.1250	Fairing lower
26	2	115.03.1260	Lateral cable tray
27	6	115.03.1270	Door support cable
28	1	115.03.1280	Tank lid
29	2	115.03.1290	tank fastening strap
30	1	115.03.1300	315 liters tank
31	1	115.03.1310	Rear lower fairing
32	1	115.03.1320	Chassis
33	1	115.03.1330	Generator Base
34	1	115.03.1340	Rear axle
35	4	115.03.1350	Tire 600 x 9
36	1	115.03.1360	Drawbar
37	1	115.03.1370	Axle drawbar
38	2	115.03.1380	washer 16mm
39	2	115.03.1390	Cotter 3 x 25
40	1	115.03.1400	Unlock the brake pedal
41	1	115.03.1410	Directional set
42	1	115.03.1420	Pedal axle
43	2	115.03.1430	washer 13mm
44	2	115.03.1440	Cotter 3 x 20

45	4	115.03.1450	Hub
46	20	115.03.1460	Wheel bolt
47	4	115.03.1470	Outer bearing
48	20	115.03.1480	Wheel nuts
49	4	115.03.1490	Cotter 4 x 50
50	4	115.03.1500	Calotte
51	5	115.03.1510	Ring
52	1	115.03.1520	Screw lock direction
53	1	115.03.1530	Bearing direction
54	4	115.03.1540	Retainer
55	4	115.03.1550	Inner bearing
56	4	115.03.1560	Wheel in two parts 9 inches
57	8	115.03.1570	Screw M5 x 12 Allen Inox
58	1	115.03.1580	2" press cable
59	1	115.03.1590	Dashboard
60	1	115.03.1600	10mm tempered glass
61	1	115.03.1610	Panel door
62	1	115.03.1620	Magnetic closure

CONTROL PANEL OF THE GENERATOR SET



1- Instrument Panel in English;
2- Hourmeter;
3- Lubricant Oil Pressure Indicator;
4- Fuel Level Indicator;
5- Water Temperature Indicator ;
6- AC Digital Ammeter;
7- AC Digital Voltmeter;
8- Digital Frequency Meter;
9- DC Digital Voltmeter;
10- DC Digital Ammeter;
11- LEDs Fault Indicators;
12- Panel Light Switch;
13- Switch The Inner Light;
14- Switch Flasher;
15- LED Indicator Engine Running;
16- Start Pushbutton and Fault Reset;
17- LED Indicator Engine Off;
18- Shutdown Pushbutton;
19- LED Indicator Stop For Low Fuel;
20- LED Indicator Low Fuel;
21- 115V LED Output Indicator On;
22- Switch To Energize The Output 1 Of 115V;
23- Switch To Energize The Output 2 Of 115V (Opt.);
24- Knob For Fine Adjustment Of The Output Voltage;
25- Pushbutton For Emergency Shutdown;
26- LED Indicator Linked 28VDC Output;
27- Pushbutton To Connect The Output Of 28VDC;
28- Pushbutton To Turn Off The Output Of 28VDC.

	Date	Name	Supersom Ind. e Com. Ltda.
Draw	05/01/16	Lima	TEL: +55 (31) 3371-1944
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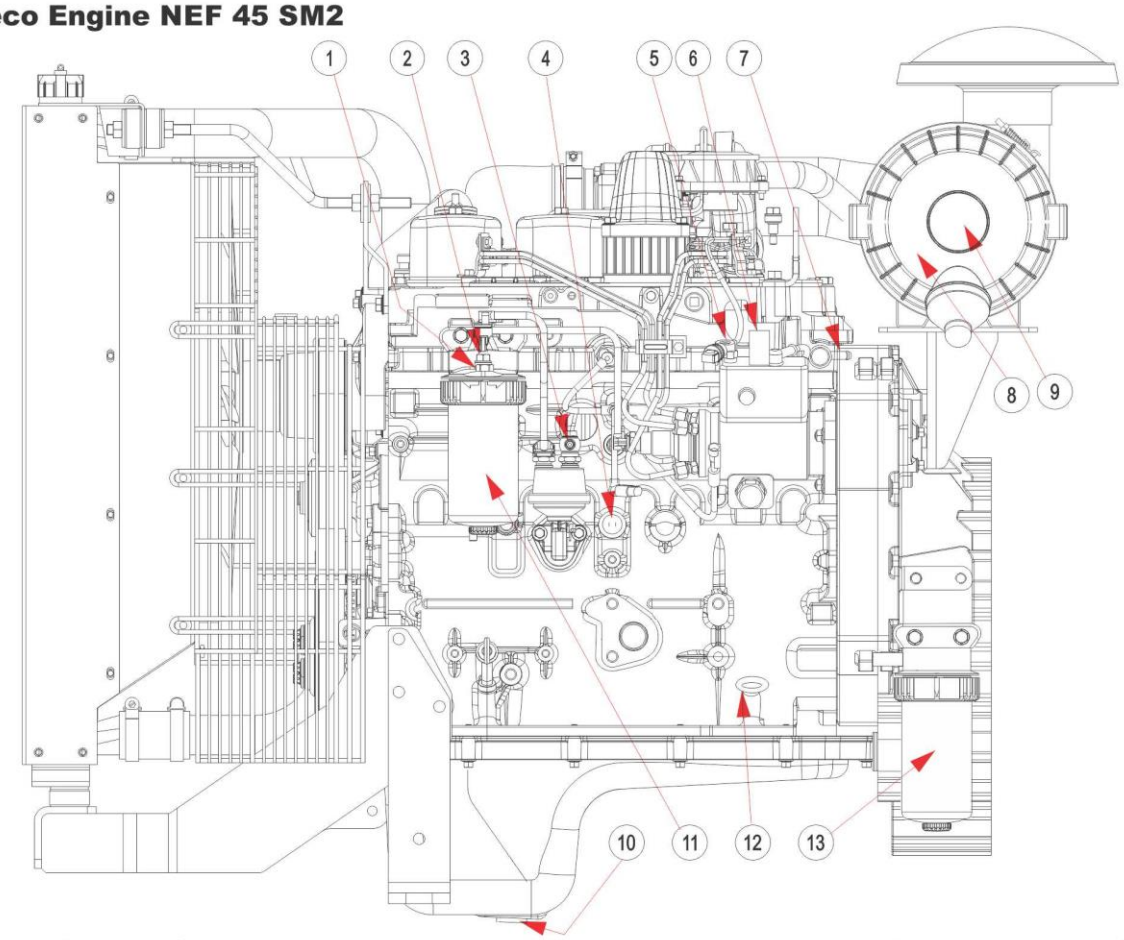
Rev.	05/01/16	Rodrigues	
Esc. —	Designation: CONTROL PANEL OF THE GENERATOR SET		DERIVED FROM / DRAWING Nº PN 115.04.2003

Iveco Engine NEF 45 SM2



Item	Description	PN
1	Fixing bolt	115.02.7011
2	Screw system air withdrawal	115.02.7015
3	Fuel input	115.02.7017
4	Oil Pressure Sensor Contact / instrument	115.02.7022
5	Accelerator fixed inside	115.02.7025
6	Actuator	115.02.7019
7	Fuel return outlet	115.02.7009
8	Air Filter Primary Element	115.02.7013
9	Air filter element secondary	115.02.7028
10	Bujão oil removed	115.02.7029
11	Secondary element fuel filter	115.02.7021
12	Oil dipstick	115.02.7028
13	Fuel filter primary element	115.02.7029

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Rev.	02/02/16	Rodrigues

SUPERSOM

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TEL: +55 (31) 3371-1944
Belo Horizonte - MG

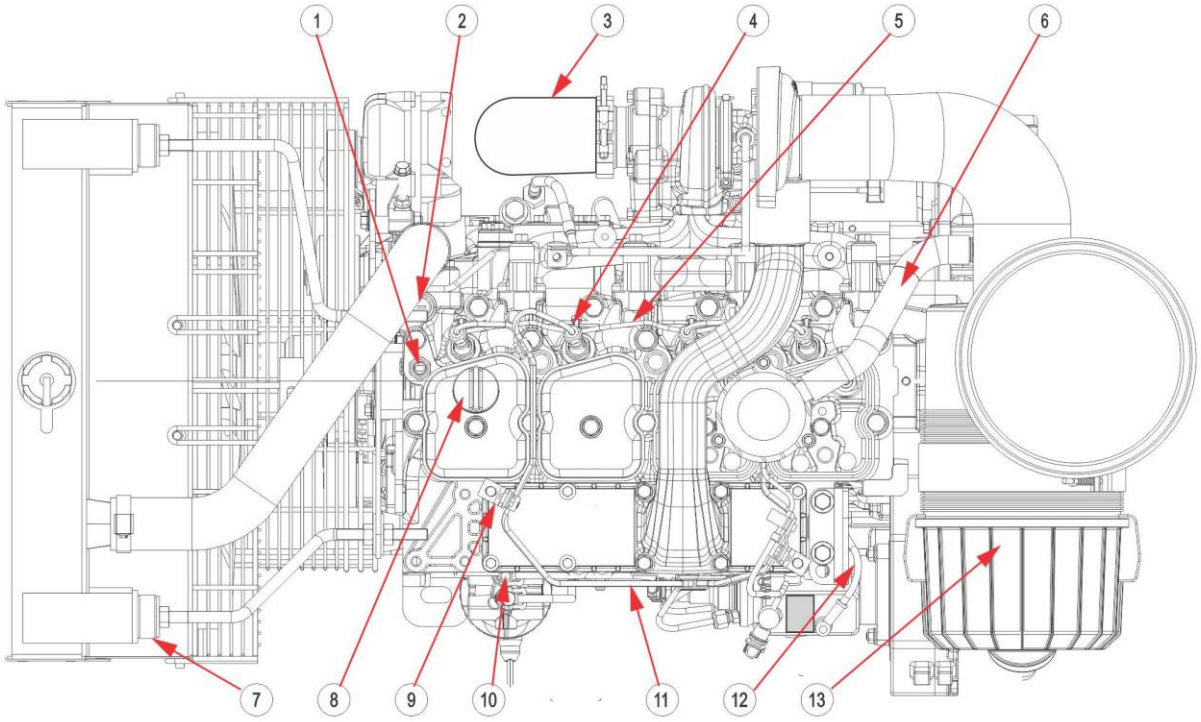
Esc. —

Designation: The engine left side details

DERIVED FROM

DRAWING Nº PN 115.04.2004

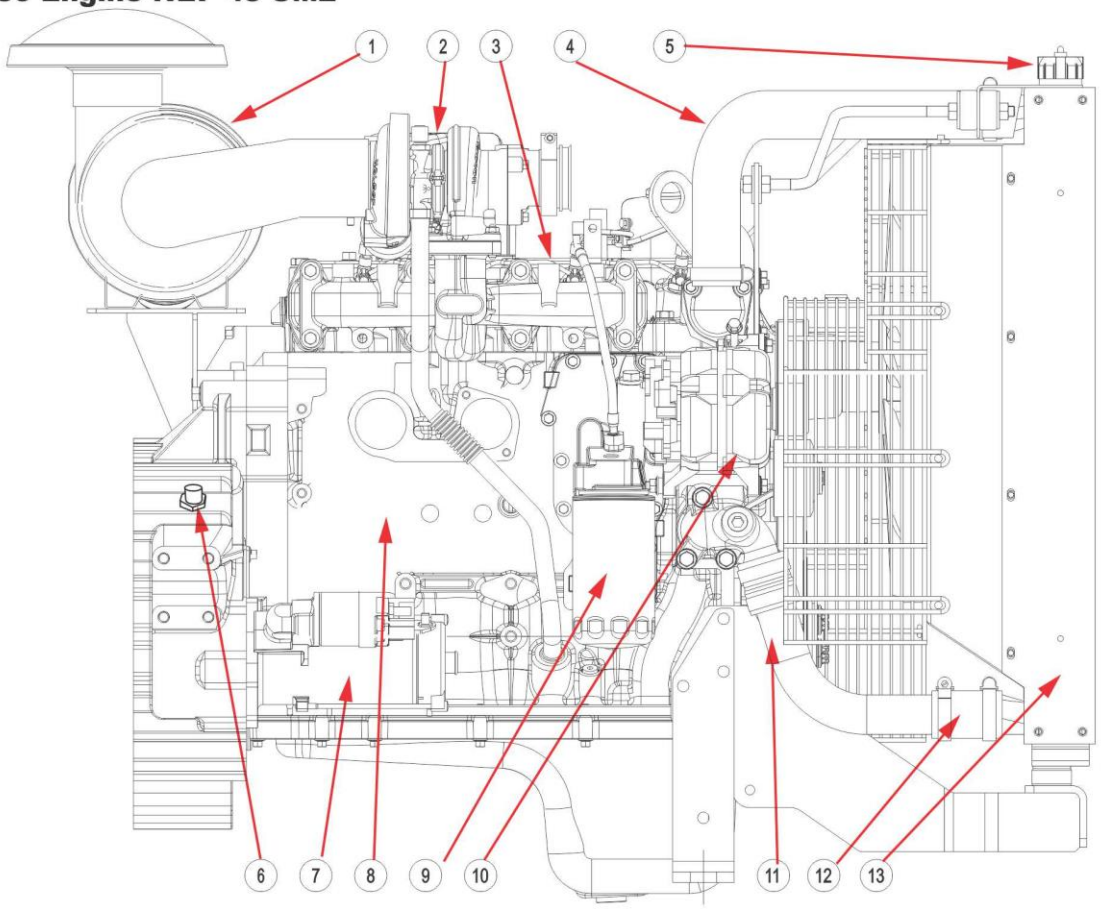
Iveco Engine NEF 45 SM2



Item	Description	PN
1	Temperature sensor to measure	115.02.7103
2	Temperature sensor for stopping the engine	115.02.7105
3	Exhaust pipe with silencer	115.02.7117
4	Injection beaks	115.02.7122
5	Return pipe beaks	115.02.7116
6	Sigh hose	115.02.7119
7	Radiator support rubber	115.02.7129
8	Oil Input cover	115.02.7123
9	Brackets set of tubes	115.02.7128
10	Screw system air withdrawal	115.02.7139
11	Input beaksTubes	115.02.7131
12	Return tube	115.02.7148
13	Air filter cover	115.02.7149

	Date	Name		
Draw	02/02/16	Wagner	SUPERSOM	Supersom Ind. e Com. Ltda.
Copy				TEL: +55 (31) 3371-1944
Rev.	02/02/16	Rodrigues		Belo Horizonte - MG
Esc. —	Designation: The engine up side details			DERIVED FROM / DRAWING Nº PN 115.04.2005

Iveco Engine NEF 45 SM2



Item	Description	PN
1	Air filter assembly	115.02.7031
2	Turbine assembly	115.02.7035
3	Cylinder head assembly	115.02.7037
4	Upper hose	115.02.7042
5	Radiator cap	115.02.7046
6	Rotation sensor	115.02.7049
7	Start engine	115.02.7059
8	Mounting the engine part	115.02.7063
9	Lube oil filter	115.02.7068
10	Alternator	115.02.7079
11	Hose central	115.02.7081
12	Lower hose	115.02.7088
13	Radiator	115.02.7099

	Date	Name	Supersom Ind. e Com. Ltda.
Draw	02/02/16	Wagner	TEL: +55 (31) 3371-1944
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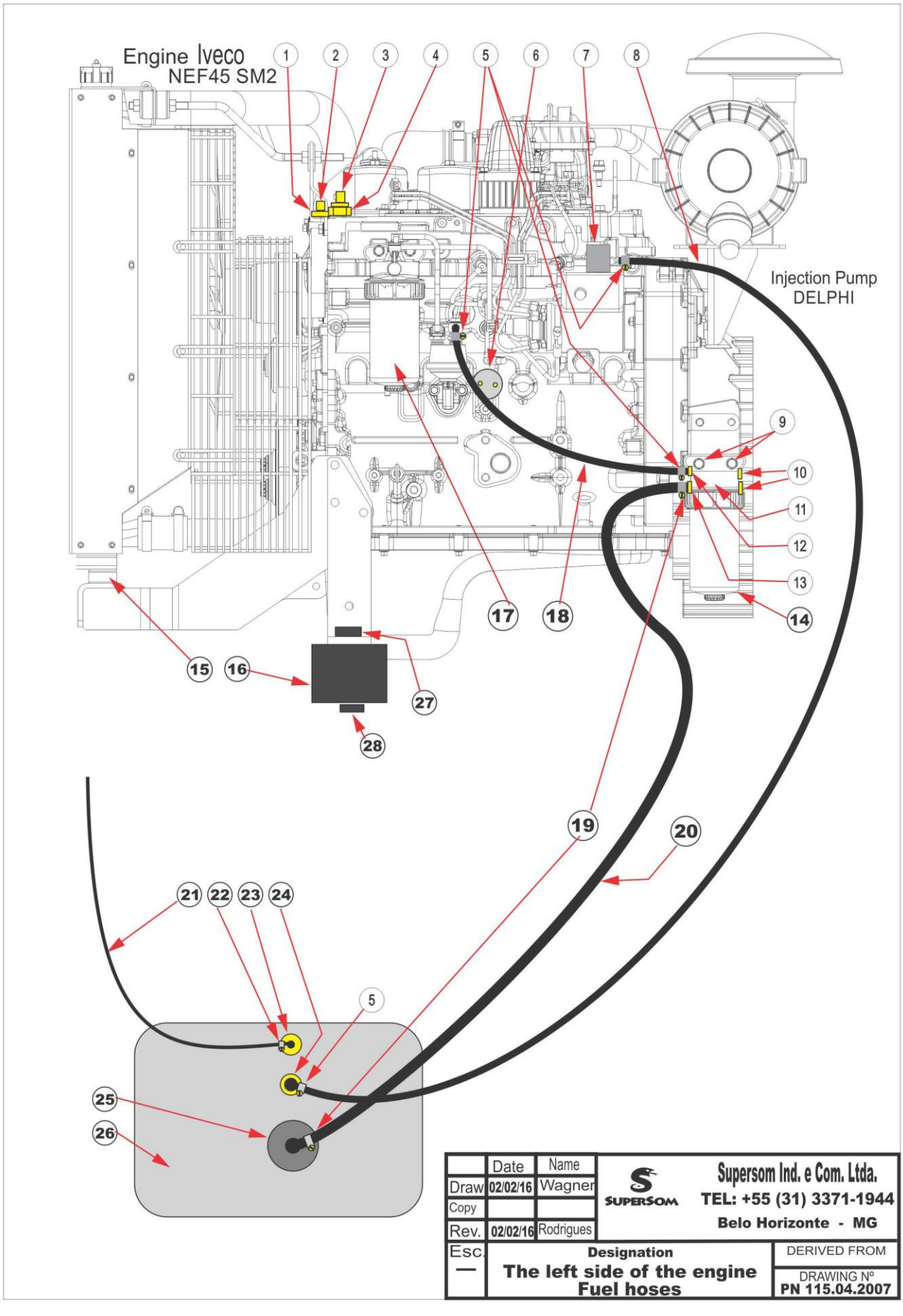
Rev.	02/02/16	Rodrigues	
Esc. —	Designation: The right side of the engine		DERIVED FROM / DRAWING Nº PN 115.04.2006



	Date	Name	Supersom Ind. e Com. Ltda.
Draw	02/02/16	Wagner	TEL: +55 (31) 3371-1944
Copy			Belo Horizonte - MG
Rev.	02/02/16	Rodrigues	
Esc. —	Designation: The left side of the engine Fuel hoses		DERIVED FROM / DRAWING Nº PN 115.04.2007

Item	Description	PN
1	Brass sleeve 1/2 gas for M14	115.02.2111
2	Temperature sensor, NO contact	115.02.2112
3	Temperature sensor Instrument	115.02.2113
4	Brass sleeve 1/2 gas for M14	115.02.2114
5	13-16 bracket (4 pieces)	115.02.2115
6	Oil pressure sensor, double, 3RHO make, model 7702 M14 x 1.5	115.02.2116
7	GAC actuator ADD103B-12	115.02.2117
8	Return hose, 3/8 "	115.02.2118
9	Screw M12 x 30 Hexagon (2 parts)	115.02.2119
10	Male 1/4 gas cap (2)	115.02.2120
11	Full aluminum head	115.02.2121
12	Spike 3/8 "male thread 1/4 gas	115.02.2122
13	Spike 1/2 "male thread 1/4 gas	115.02.2123
14	Oil filter Diesel Mann modelo_____	115.02.2124
15	Bottom cushion radiator	115.02.2125
16	Cushion Brand Jahu code 06033-5	115.02.2126
17	Diesel oil filter _____modelo_____	115.02.2127
18	Inlet hose, 3/8 "comp .____ brand GoodYear mod_____	115.02.2128
19	Clamp 19-22 (2 pieces)	115.02.2129
20	Inlet hose, 1/2 "comp .____ brand GoodYear mod_____	115.02.2130
21	Sigh hose, 1/4 "comp .____ brand GoodYear mod_____	115.02.2131
22	Clamp 9-13	115.02.2132
23	Connection male thread 1/2 gas with spike 1/4 "	115.02.2133
24	Return tube inlet 3/8 "	115.02.2134
25	Fuel level sensor (float) Bepo Make Model M-196P	115.02.2135
26	315 liters fuel tank, Bepo brand, model M-197F	115.02.2136
27	Screw M16 x 30 hexagonal (6 pieces)	115.02.2137
28	Screw M16 x 45 hexagonal (6 pieces)	115.02.2138

	Date	Name	Supersom Ind. e Com. Ltda.
Draw	02/02/16	Wagner	TEL: +55 (31) 3371-1944
Copy			Belo Horizonte - MG
Rev.	02/02/16	Rodrigues	
Esc. —	Designation: The left side of the engine Fuel hoses		DERIVED FROM / DRAWING Nº PN 115.04.2008

SECTION 10 – WARRANTY

WARRANTY

The full guarantee of their "JET-POWER DIESEL 90KVA" is 01 (one) year.

The extended warranty is for all the mechanical parts (chassis, axle, steering, brakes, bodywork, etc.) and all electrics (except output cables and WEG generator) and is up to a maximum of 03 (three) years.

It is considered the warranty time from the entry into operation of the GPU or the issuing of the bill of sale, and whichever occurs first.

To take advantage of the extended warranty is necessary to make all revisions and oil changes by our company or authorized every 400 (four hundred) hours (maximum 450 hours). If not made, he will lose the extended warranty (becomes the one (01) years, including the legal guarantee). They can be made to the trading of oil and filters and revisions described in this manual by your company or public body. Request to be made by us or authorized, are not free, being charged manpower, wear parts, oil and filters, not covered by warranty and travel costs or on-site visit.

The opening of the covers and the panel may be made by the user without loss of collateral, but must be made in person with technical knowledge, for output voltage adjustment or repairs described in this manual or not.

The technical assistance in another country will be able to be made by the importer following instructions in this manual or other sent by email, without voiding the warranty. Parts may be sent by FedEx or DHL, only the cost of shipping, if in warranty. If necessary visit from a technician will only be charged travel expenses, no labor charge for three years.
It is necessary revision every year for our company, to see if it lives up to three-year warranty. Should be made 11-13 and 23-25 months of the beginning of validity of the guarantee.

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GPU MANUFACTURING YEAR / MODEL 2016.
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"JET-POWER" TRADEMARKS SUPERSOM INDUSTRIA E COMERCIO LTDA.