

  
**Generating Set**  
**Base Frame - Diesel**

# GE.CU.030/027.BF+011

1500 rpm - Threephase - 50Hz - 400V  
 Multifunction panel without switching on board



Image for demonstration purposes

## Standard equipment

### Exhaust

Exhaust manifold protection  
 Silenced muffler -15dB(A)

### Fuel Supply

Single wall daily tank with bunded base  
 Automatic shutdown system for low fuel level  
 Fuel gauge

### Handling

Loadable side by side for truck transportation

### Base Frame

Anti-vibrating mounting pads  
 Anti pollution Bunded base

### Engine

High coolant temperature and low oil pressure shutdown system  
 External oil drain points  
 Engine liquids (oil and antifreeze)  
 Tropicalized radiator  
 Rotating parts protection

### Alternator

AVR Automatic Voltage Regulator  
 Impregnation for marine environment  
 IP23

### Panel & connection

Emergency Stop button  
 Protection by controller  
 Cable output from the bottom  
 IP44 wiring  
 Start-up battery (pre-charged)  
 Grounding point

### Documentation

CE conformity declaration  
 User and Maintenance manual  
 Wirings diagrams

### Normatives

All Generating sets are compliant to CE Marking  
 2014/30/UE Electromagnetic compatibility  
 2000/14/CE Noise Emission for outdoor use  
 Factory-designed systems built according to ISO 9001:2015  
 CEI EN 60204-1:2018 - Electrical equipment of machines

## Primary data

### General Information

|                                 |     |         |
|---------------------------------|-----|---------|
| Speed                           | RPM | 1500    |
| Frequency                       | Hz  | 50      |
| PRP                             | KVA | 25      |
| PRP - Prime power               | KW  | 20,0    |
| LTP - Standby power             | KVA | 27,5    |
| LTP - Standby power             | KW  | 22,0    |
| Standard Voltage                | V   | 400/230 |
| Current                         | A   | 36,13   |
| Voltage for current calculation | V   | 400     |
| COSFI                           | 0,8 | 0,8     |

### General electrical protection

|                |   |                                      |
|----------------|---|--------------------------------------|
| Rated current  | A | 63                                   |
| Type           |   | Magnetothermal switch on panel board |
| Poles          | N | 4P                                   |
| Optional/notes |   | Opening coil                         |

### Fuel Consumption

| TYPE                          |      | Diesel |
|-------------------------------|------|--------|
| Standard Fuel Tank capacity   | lt   | 90     |
| Autonomy @ 75% load           | h    | 19     |
| Fuel consumption at 100% load | lt/h | 6      |
| Fuel consumption at 75% load  | lt/h | 4,8    |
| Fuel consumption at 50% load  | lt/h | 3,5    |

### General data

|                         |      |       |
|-------------------------|------|-------|
| Rated capacity          | Ah   | 1x100 |
| Auxiliary Voltage       | V    | 12    |
| Exhaust gas temperature | °C   | 660   |
| Combustion air flow     | l/s  | 38,8  |
| Cooling fan airflow     | mc/s | 1,6   |
| Exhaust diameter        | mm   | 50    |

### Weight and Dimensions

|  |            |            |
|--|------------|------------|
| Dimensions (L x W x H)                             | cm         | 162x88x122 |
| Weight with liquids (excluding optionals and fuel) | Kg (+/-3%) | 641        |

## Engine

|                        |      |                                       |
|------------------------|------|---------------------------------------|
| Factory                |      | <b>Cummins</b>                        |
| Model                  |      | <b>X2.5G2</b>                         |
| Emissions stage        |      | <b>Stage 0</b>                        |
| Speed governor         |      | <b>Mechanic</b>                       |
| Radiator               | °C   | <b>50</b>                             |
| Cooling                | Tipo | <b>liquid (water + 50% Paraflu11)</b> |
| Active net power       | Kwm  | <b>23</b>                             |
| Nominal net power      | CV   | <b>31,3</b>                           |
| Cycle                  | Tipo | <b>4 strokes</b>                      |
| Injection              | Tipo | <b>Direct</b>                         |
| Aspiration             | Tipo | <b>Natural</b>                        |
| Numbers of cylinders   | N    | <b>3</b>                              |
| Cylinders arrangement  |      | <b>L</b>                              |
| Bore                   | mm   | <b>91</b>                             |
| Stroke                 | mm   | <b>127</b>                            |
| Total displacement     | lt   | <b>2,477</b>                          |
| Engine oil features    |      | <b>15W40-API CI-4/CH-4 ACEA E5-E7</b> |
| Total oil capacity     | lt   | <b>8</b>                              |
| Total coolant capacity | lt   | <b>10</b>                             |

## Alternator

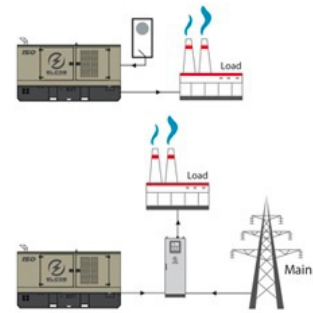
**\* May vary based on stock availability. However, a primary brand will be used.**

|                                      |       |                              |
|--------------------------------------|-------|------------------------------|
| Factory                              |       | <b>Stamford</b>              |
| Model                                |       | <b>S1L2-J1</b>               |
| PRP continuous power                 | KVA   | <b>35</b>                    |
| Voltage Regulator (voltage accuracy) | +/- % | <b>1</b>                     |
| Poles                                | N°    | <b>4</b>                     |
| Phases                               | N°    | <b>3+N</b>                   |
| Standard windings connection         |       | <b>Star Series</b>           |
| Stator/rotor impregnation            |       | <b>H (Outdoor Temp 40°C)</b> |
| Efficiency                           | %     | <b>88</b>                    |
| Engine coupling                      |       | <b>Elastic disk</b>          |
| Short circuit current                |       | <b>&gt;= 300% (3In)</b>      |
| Protection degree                    | IP    | <b>23</b>                    |
| Cooling system                       |       | <b>Self ventilating</b>      |
| Maxium overspeed                     | rpm   | <b>2250</b>                  |
| Waveform distortion                  | %     | <b>&lt;5</b>                 |
| Exciter                              |       | <b>Diode bridge</b>          |

## Standard operating environmental conditions

|                     |    |             |
|---------------------|----|-------------|
| Ambient temperature | °C | <b>25</b>   |
| Relative Humidity   | %  | <b>30</b>   |
| Max altitude        | mt | <b>1000</b> |

# Control Systems on board QLE-B-SC-3F-4P-63-01



operating scheme - schema di funzionamento

## QLE Multifunction panel without switching on board

The QLE command and control panel offers outstanding protection, monitoring and control for small and middle size generator sets. Elcos's control module MC2 Plus offers advanced features to meet the most demanding on-site application. Elcos's control module MC2 Plus is designed to offer an easy user interface. Variant without transfer switch. The panel directly manages the QLTS and QC panels. The output line is protected by a magnetothermic breaker with opening coil. The overload and short-circuit protection is managed by the control board.

### Mechanical features

|                   |    |    |
|-------------------|----|----|
| Protection degree | IP | 55 |
|-------------------|----|----|

### Battery charger

|                                |                 |             |
|--------------------------------|-----------------|-------------|
| Model                          |                 | ELCOS - CB1 |
| Maximum output current         | A               | 2,5         |
| Output DC voltage (selectable) | V <sub>dc</sub> | 12-24       |
| Input AC voltage (selectable)  | V <sub>ac</sub> | 220-260     |
| Frequency                      | Hz              | 50-60       |

### Data Communication

|                        |  |                 |
|------------------------|--|-----------------|
| Data connection port   |  | RS-485          |
| Communication protocol |  | Mod-bus RTU-8N1 |

### Remotable functions in terminal box

|  |   |
|--|---|
| GS start                               | Genset contactor close/open command (1) |
| Mains contactor close/open command (2) | Remote horn - DC output                 |
| Programmable output - Volt free output |   |

(1) Ready to load function (ARS mode without QC or QLTS panel)(1) Genset contactor open and close command (AMF mode with QC or QLTS panel)(2) Mains contactor open and close command (AMF mode with QC or QLTS panel)

## Control Module



| Model          | MC2 Plus  |
|----------------|-----------|
| Operating mode | AMF - ARS |

### Specifics

#### Applications

Emergency to the Mains  
Stand-alone  
Construction site/Rental  
Self-production

#### ENGINE MEASURES

Fuel tank level %  
Engine oil pressure BAR (1)  
Engine Coolant temperature °C (1)  
Total run time  
Battery voltage  
Start-ups counter  
Engine speed

#### ALTERNATOR MEASURES

Generator Voltage L1, L2, L3  
Generator Voltage L1-N, L2-N, L3-N  
Generator frequency  
Generator current L1, L2, L3  
Generator Apparent Power kVA  
Generator Active Power kW

#### COMMUNICATION PORTS

Can-bus port  
RS485 port with Mod-bus RTU communication  
USB port for parameters saving and firmware update

#### EQUIPMENT

Microprocessor Logic  
Back-lit display  
Programmable from display  
16 event log  
Icons management  
STOP button  
START button  
TEST button  
Reset alarm button  
Alarm mute button

#### PRE-ALARMS/ ALARMS

Common Alarm  
Fuel reserve (pre-alarm)  
Low fuel level (alarm)  
Charge alternator failed (dinamo)  
Low oil pressure (alarm)  
Oil sensor failed (alarm)  
High coolant temperature (alarm)  
Low water level (1)  
Water in fuel (1)  
Battery undervoltage  
Battery overvoltage  
GS failure to start  
GS failure to stop  
Can-bus Failure  
No Can-bus communication  
Genset overload L1, L2, L3 phases  
Genset short circuit  
Genset overvoltage  
Genset undervoltage  
Genset high frequency  
Genset low frequency  
overspeed  
Earth fault (alarm)  
Maintenance request  
Emergency button pressed  
Remote emergency active  
Genset negative phase sequence

#### VISUALIZATIONS ON CONTROL

##### MODULE/DISPLAY

Pre-alarms  
Alarms  
Engine measures  
Alternator measures  
Operating mode  
Genset status  
Genset contactor status  
Glow plugs status

##### CONTROL MODULE FUNCTIONS

Remote Start and Stop  
Manual Start and stop  
Emergency stop button on panel board  
Remote emergency stop  
Remote test on load  
Scheduled start-ups  
MODBUS commands (Start, Stop, Reset, Test)

Elcos MC2 control module is designed for diesel generating sets. It offers outstanding protection, monitoring and control for small and middle size generator sets.

## OPTIONAL

### ⚙️ Fuel Supply



**O.G-ACO-AT-C3V-01**

External fuel tank connections with 3-way valve for supply from internal or external tank (10/100 kVA)



**O.G-ACO-AT-CI-01**

External tank connections for supply only from external tank (g without tank) GE 10/100



**O.G-ACO-BT-P2000-600**

600 Lt Oversized Fuel Tank on board for BF (25/40 kVA), (Increased weight and size)



**O.G-ACO-GA-01**

Mechanical analogue float for internal fuel tank on board

### ⚙️ Alternator

**O.G-ALT-AL-CHBR-01**

Different brand alternator (10/40 kVA)

### ⚙️ Batteries



**O.G-BAT-BAE-01**

Maintenance free high efficiency starter batteries (10/40 kVA)



**O.G-BAT-STB-01**

Battery isolator lockable (10/100 kVA)

### ⚙️ Canopy

**O.G-COF-55-COF-01**

55 dBA Canopy for Gen Sets 25/40 kVA (BF Version)

### ⚙️ Electrical on board



**O.G-USP-63A5P**

Output power socket 63A EC 5P (25/40 kVA) for Gen Sets SS Version +011



**O.G-USP-SW-MOT.0010-0040**

Motorization switch on board machine, integrated in the panel for 10/40 Kva Ge - (for variant +11)

**O.Q-QBM-BMIN-230V-01**

Additional price for 230V minimum voltage coil on the modular main switch inside the control panel (check feasibility)

**O.Q-QBM-CPI-BEN-01**

Permanent insulation controller for IT networks up to 230V / 400V. BENDER IR423-D4-1. Adjustable threshold 10 ÷ 300 kohm. (2 DIN rail modules - check feasibility)

**O.Q-QLE-K-DIF-M3**

Adjustable differential protection only for MC2-PLUS controller for Gen Sets 10/500 kVA (+011 variant)



**O.Q-QLE-QBM-COM-AMF25**

Additional price for QBM COMAP AMF25 panel replacing the standard QLE-A.



**O.Q-QLE-QBM-DSE-7320**

Additional price for QBM DSE7320 panel replacing the standard QLE-A.


**O.Q-QLE-QPE-MC4**

Additional price for QPE-C panel with MC4 replacing the standard QLE-A.

**O.Q-QPE-INT-CST-01**

GE main switch STATUS contact wired to terminal board inside the QPE panel on board generator (10 / 40KVA) (no variant +10)


**O.Q-QPE-SAS-02**

Auto Start-Stop at load request (QPE, QLE panels)

**Engine**

**O.G-MOT-FC-2**

Dust collector filter - for Gen Sets 25/40 kVA


**O.G-MOT-FSA-2**

Fuel/Water Separator Filter - for Gen Sets 25/40 kVA


**O.G-MOT-K-40C-01**

Engine liquids suitable for -40°C ambient temperature for Gen Sets 10/40 kVA


**O.G-MOT-PO-01**

Oil change pump for Gen Sets 10/100 kVA


**O.G-MOT-RF-01**

Electronic speed governor for Gen Sets 10/40 kVA


**O.G-MOT-SC-AC-EL-01**

Engine pre-heater 230V with thermostat on board for Gen Sets 10/100 kVA + 130/500 PRO version


**O.G-MOT-SC-AC-EL-02**

Super hot engine heater 230V with thermostat on board for Gen Sets 10/100 kVA


**O.G-MOT-SE-PO-LR**

Oil pressure level and engine temperature sensors (from 10 to 100kVA)


**O.G-MOT-SRO-AU-12L**

Automatic oil refilling system (10/40 kVA)

**ATS Panels**

**QC1.0060A**

Separate ATS panel, 4P - 60A contactors (40 kVA 400V - 30 kVA 230V) Dim. 60 x 25 x 80 cm - 47 kg. (ex QC1.040)














**QLTS.060A**

Wall-mounted ATS switching panel 60A 4P (40 kVA 400V - 20 kVA 230V) Dim. 40 x 16 x 40 cm - 12 kg.

**Exhaust**

**O.G-SCA-CAT-03**

Catalytic converter (25/60 kVA)

|   |                           |  |
|---|---------------------------|--|
|                | <b>O.G-SCA-FAP-K40</b>    | Particulate filter (DPF) for Gen Sets 25/40 kVA  |
|                | <b>O.G-SCA-GF-50</b>      | Exhaust bellow with flexible joint including flange and counter flange (10/40 kVA)   |
|                | <b>O.G-SCA-KS-50</b>      | Exhaust flex pipe for drainage (length 3 mt.)  |
|                | <b>O.G-SCA-MR-03</b>      | Residential muffler -35 dBA (25/40 kVA)  |
|   | <b>O.G-SCA-MR-MO-01</b>   | Installation on board for residential muffler, particulate filter, catalytic converter on BF (10/100 kVA)  |
|                | <b>O.G-SCA-PF-01</b>      | Spark arrestor for Gen Sets 10/40 kVA  |
|  <b>Test</b>   |                           |  |
|                | <b>MS.CP-LT-01</b>        | FAT - Factory Acceptance Test for single Gen Set from 10 to 100 kVA according to our standard procedures in Elcos factory (max 2 hours - max 4 people - max 1 hour of operation)                       |
|              | <b>MS.CP-SP-01</b>        | FAT - Factory Acceptance Test for single custom Gen Set from 10 to 100 kVA max 4 operating hours or parallel system up to 4 units for 1 operating hour, in Elcos factory (max 4 hours - max 4 people ) |
|   | <b>MS.CP-ST-01</b>        | FAT - Factory Acceptance Test for single Gen Set from 10 to 100 kVA according to our standard procedures in Elcos factory (max 4 hours - max 4 people - max 2 hour of operation)                       |
|              | <b>MS.TV-ST-01</b>        | Vibration test on 10 points with certificate for single Gen Set from 10 to 250 kVA   |
|  <b>Vari</b> |                           |  |
|              | <b>O.G-VAR-CAT-01</b>     | Toolbox for ordinary maintenance.  |
|   | <b>O.G-VAR-PUN-TER-01</b> | Round earth spike, diam. 20 mm, height 1.5mt, galvanized, complete with clamp and 3m yellow/green cable model FS17 1x35mm <sup>2</sup> with cable lugs.  |
|   | <b>O.G-VAR-PUN-TER-02</b> | Cross-shaped earth spike, height 1.5mt, galvanized, complete with clamp and 3m yellow/green cable model FS17 1x35mm <sup>2</sup> with cable lugs.  |
|              | <b>O.G-VAR-SFA-02</b>     | Aspiration / expulsion sound attenuators -25dBA for Gen Sets 10/40 kVA BF Version  |

## PRP

Engines of this rating provide unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine's prime power rating with a maximum number of 500 operational hours at 100% prime power rating. An overload capability of 10% is available, however, is limited to a period of 1 in every 12 hours

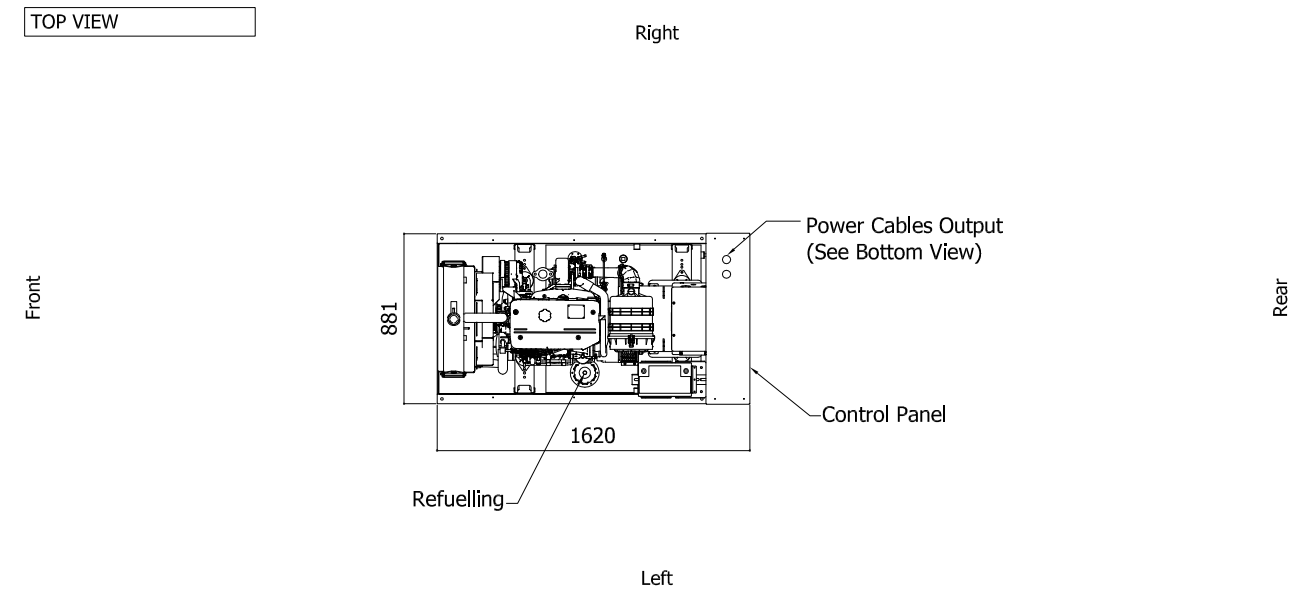
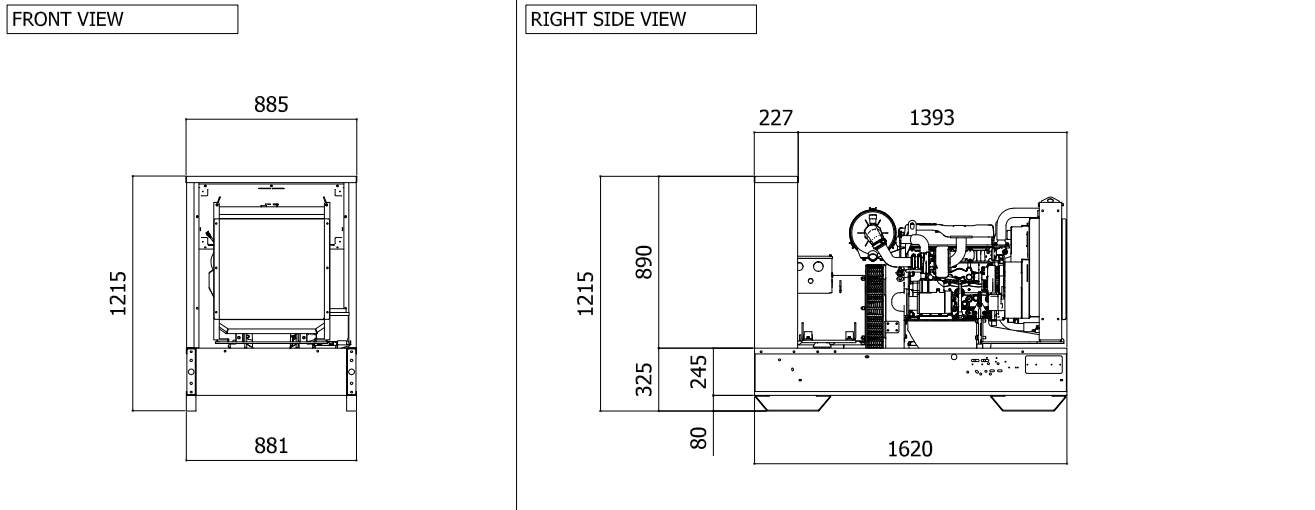
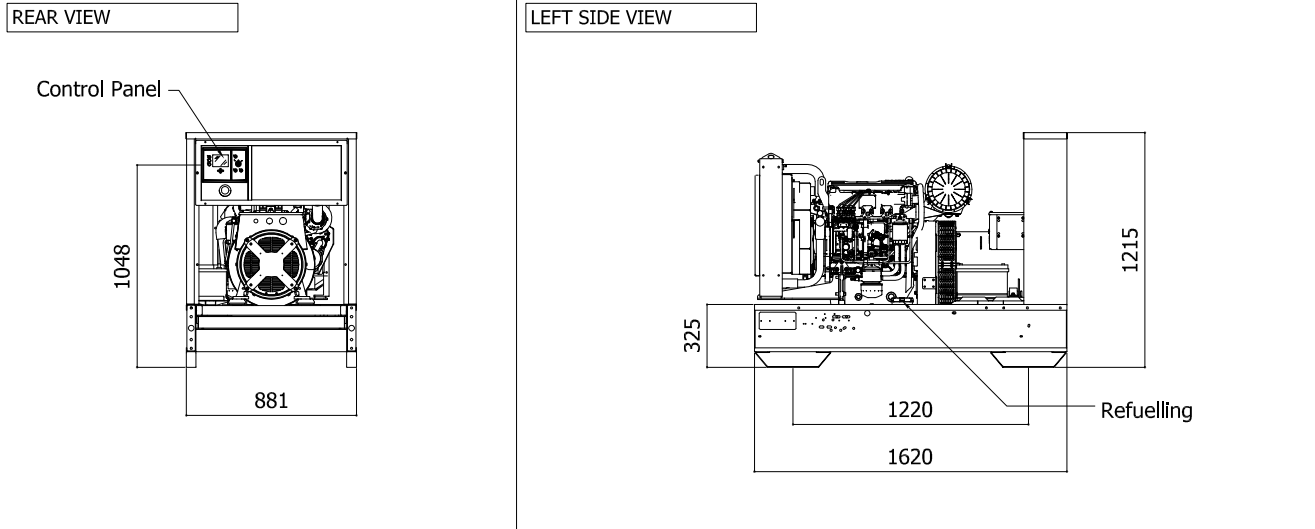
## LTP

Limited-time running power is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500h of operation per year with the maintenance intervals. The overload is not allowed.



|        |            |            |               |   |       |          |      |    |              |            |          |
|--------|------------|------------|---------------|---|-------|----------|------|----|--------------|------------|----------|
| Sheet: | PRO2000.BF | OPEN FRAME | Exhaust side: | - | Type: | STANDARD | Rev: | 00 | Last Update: | 04-05-2020 | Page 1/2 |
|--------|------------|------------|---------------|---|-------|----------|------|----|--------------|------------|----------|

**OVERALL DIMENSIONS [mm]**

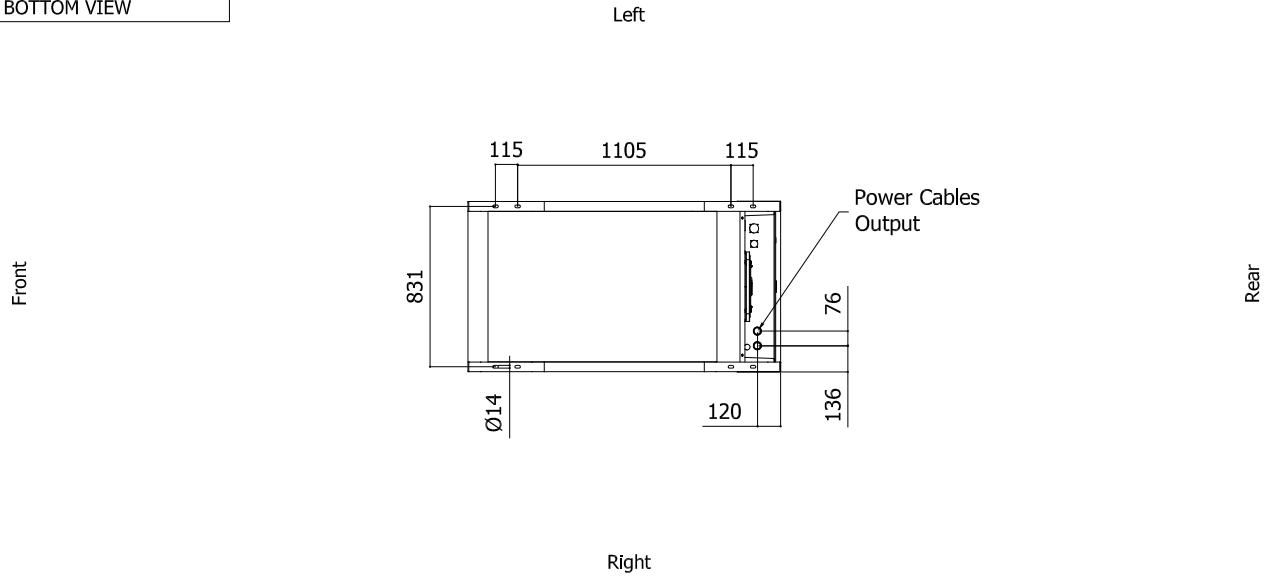


**IMPORTANT:**

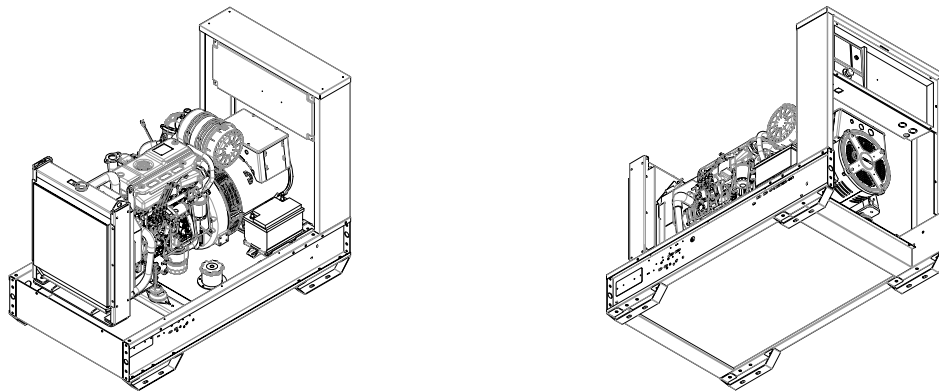
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|        |            |            |               |   |       |          |      |    |              |            |          |
|--------|------------|------------|---------------|---|-------|----------|------|----|--------------|------------|----------|
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|--------|------------|------------|---------------|---|-------|----------|------|----|--------------|------------|----------|

**BOTTOM VIEW**



**3D VIEW**



**VENTILATION OF THE ROOM**

The windows area in the generating set room needs to be (recommended):

Aspiration: 0.38 m<sup>2</sup>

Expulsion: 0.30 m<sup>2</sup>

ATTENTION: for a correct ventilation the expulsion air and the exhaust gas needs to be conveyed in the open-air

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