Image for demonstration purposes

Generating Set
SUPERSILENT - Diesel

# GE.VO3A.550/500.SS+011

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

.SS

## Standard equipment

### Canopy Soundproofing
Soundproofing with class 1 polyester material
Handles with key lock and automatic closing
Special baffles for air intake and air expulsion
Inspection doors for controls and maintenance

### Exhaust
Exhaust rain cap
Exhaust manifold protection
Insulated exhaust pipes
Internal residential muffler - 35dB(A)

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

### Handling
n.2 lifting hooks integrated into the bearing structure

### Base Frame
Bunded base at 110% of fuel tank capacity
Anti-vibrating mounting pads
Battery compartment externally accessible for easy service

### Engine
Engine pre-heater 230V
High coolant temperature and low oil pressure shutdown system
Oil pressure and coolant temperature gauge (only with QPE or +14 variant)
External oil drain points
Engine liquids (oil and antifreeze)
Tropicalized radiator
Rotating parts protection
Electronic speed governor

### Alternator
AVR Automatic Voltage Regulator
AVR Pre-arranged for parallel
Impregnation for marine environment
IP23

### Panel & connection
Emergency Stop button
Magnetothermal circuit breaker on alternator board
Tamperproof panel IP55
Cable output from side
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* | **500** |
| PRP - Prime power | *KW* | **400,0** |
| LTP - Standby power | *KVA* | **550** |
| LTP - Standby power | *KW* | **440,0** |
| Standard Voltage | *V* | **400/230** |
| Current | *A* | **722,54** |
| Voltage for current calculation | *V* | **400** |
| COSFI | *0,8* | **0,8** |

## General electrical protection

| | | |
|---|---|---|
| Circuit-breaker rated current | *A* | **800** |
| Type | | **Magnetothermal switch on the alternator board** |
| Circuit-breaker poles | *N* | **4P** |

## Noise level +/- 3dB(A)

| | | |
|---|---|---|
| LWA | *dB(A)* | **95** |
| Sound pressure level @ 7 mt | *dB(A)* | **70** |
| Sound pressure level @ 1 mt | *dB(A)* | **79** |

## Fuel Consumption

| | | |
|---|---|---|
| TYPE | | **Diesel** |
| Standard Fuel Tank capacity | *lt* | **1150** |
| Autonomy @ 75% load | *h* | **15** |
| Fuel consumption at 100% load | *lt/h* | **104,8** |
| Fuel consumption at 75% load | *lt/h* | **81,6** |
| Fuel consumption at 50% load | *lt/h* | **55,8** |

## General data

| | | |
|---|---|---|
| Rated capacity | *Ah* | **2x180** |
| Auxiliary Voltage | *V* | **24** |
| Exhaust diameter | *mm* | **200** |

## Weight and Dimensions

| | | |
|---|---|---|
| Dimensions (L x w x h) | *cm* | **470x180x250** |
| Weight with liquids (excluding optionals and fuel) | *Kg (+/-3%)* | **5304** |

## Engine

| | | |
|---|---|---|
| Factory | | **Volvo** |
| Model | | **TAD 1651 GE** |
| Emissions stage | | **Stage 3A** |
| Speed governor | | **Electronic** |
| Radiator | *°C* | **50** |
| Cooling | *Tipo* | **liquid (water + 50% Paraflu11)** |
| Active net power | *Kwm* | **430** |
| Nominal net power | *CV* | **584,2** |
| Cycle | *Tipo* | **4 strokes** |
| Injection | *Tipo* | **Direct** |
| Aspiration | *Tipo* | **Turbo** |
| Numbers of cylinders | *N* | **6** |
| Cylinders arrangement | | **L** |
| Bore | *mm* | **144** |
| Stroke | *mm* | **165** |
| Total displacement | *lt* | **16,115** |
| Engine oil features | | **15W40-API CI-4/CH-4 ACEA E5-E7** |
| Total oil capacity | *lt* | **48** |
| Total coolant capacity | *lt* | **60** |
| ISO 8528-5 class | | **G3** |

The emission levels of the exhaust gas are indicated in the engine technical datasheet. Any changes due to more restrictive regulatory adjustments are excluded.

## Alternator

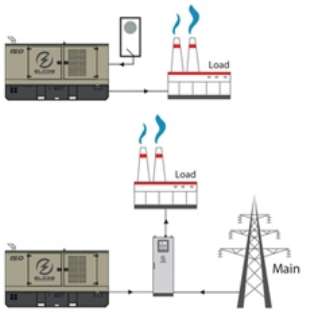
*** May vary based on stock availability. However, a primary brand will be used.**

| | | |
|---|---|---|
| Factory | | **Stamford** |
| Model | | **HCI544C** |
| Single-phase Range | *KVA* | **500** |
| Voltage Regulator (voltage accuracy) | *+/- %* | **1** |
| Poles | *N°* | **4** |
| Phases | *N°* | **3+N** |
| Standard windings connection | | **Star Series** |
| Stator/rotor impregnation | | **H (Outdoor Temp 40°C)** |
| Efficiency | *%* | **93,8** |
| Engine coupling | | **Elastic disk** |
| Short circuit current | | **>= 300% (3In)** |
| Protection degree | *IP* | **23** |
| Cooling system | | **Self ventilating** |
| Maxium overspeed | *rpm* | **2250** |
| Waveform distortion | *%* | **<5** |
| Exciter | | **Diode bridge** |

## Standard operating environmental conditions

| | | |
|---|---|---|
| Ambient temperature | *°C* | **25** |
| Relative Humidity | *%* | **30** |
| Max altitude | *mt* | **1000** |

# Control Systems on board QPE-C-SC-3F-V1




operating scheme - schema di funzionamento

## QPE Automatic panel without switching on board

The QPE-C control panel represents the evolution of the panel for the control and managment of the gen set.With its microprocessor logic it is able to meet any user requested features. The dual operation mode manual and automatic guarantees to every type of functionality protection, analysis and control of the generating set in order to make the managment easy and efficient.Variant without transfer switch on board.ATS panel type QC as optional. The panel manages the QC panels directly or any other ATS panel.

### Mechanical features

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

### Battery charger

| | | |
|---|---|---|
| Model | | **ELCOS - CB1** |
| Maximum output current | *A* | **2,5** |
| Output DC voltage (selectable) | *Vdc* | **12-24** |
| Input AC voltage (selectable) | *Vac* | **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)
Common Alarm - DC output
GS start with key in OFF position (Only in MRS mode)
GS lock
Mains contactor close/open command (2)
GS test without load
Programmable output - Volt free output

## Control Module

| | |
|---|---|
| Model | **MC4** |
| Operating mode | **AMF - MRS** |

## 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
Partial run time
Hours to maintenance
Battery voltage
Battery charging voltage
Start-ups counter
Engine speed (2)
Engine Oil temperature (2)
Cooler temperature (2)
Engine oil level (2)
Engine coolant level (2)
Engine coolant pressure (2)
Turbo pressure (2)
Fuel Consumption (2)
Tank autonomy - hrs (5)
Fuel remaining quatity (5)
Fuel used quantity (5)

**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
Generator Reactive Power kVAR
Generator accumulated power kWh
Power factor Cosfi

**MAINS MEASURES**
Mains voltage L1, L2, L3
Mains voltage L1-N, L2-N, L3-N
Mains frequency

**COMMUNICATION PORTS**
Can-bus port
RS485 port with Mod-bus RTU communication
RS232 port for display connection
USB port for parameters saving and firmware update

**EQUIPMENT**
Microprocessor Logic
Back-lit display
Programmable from display
16 event log
Multiple display languages
STOP button
START button
TEST button
Reset alarm button
Alarm mute button
Fuel transfer pump activation button
Glow-plug activation button

**PRE-ALARMS/ ALARMS**
Common Alarm
Fuel reserve (pre-alarm)
Low fuel level (alarm)
Tank overflow
Charge alternator failed (dinamo)
Low oil pressure (pre-alarm) (1)
Low oil pressure (alarm)
Oil sensor failed (alarm)
High coolant temperature (pre-alarm) (1)
High coolant temperature (alarm)
Low coolant temperature (pre-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
Reverse power
Earth fault (pre-alarm)
Earth fault (alarm)
Block from password
CAN communication Failed
Maintenance request
Emergency button pressed
Remote emergency active
Forced stop
External battery failed
Fuel theft
Genset negative phase sequence
Mains negative phase sequence
Fuel theft protection

**VISUALIZATIONS ON CONTROL MODULE/DISPLAY**
Pre-alarms
Alarms
Engine measures
Alternator measures
Mains measures
Date and time
Operating mode
Genset status
Mains status
Mains contactor status
Genset contactor status
Digital Input and Output status
Grounding current mA (3)
Grounding current threshold mA (3)
Delay time of differential protection (3)
Glow plugs status

**CONTROL MODULE FUNCTIONS**
Automatic start and stop when the Mains Fails (7)
Remote Start and Stop
Remote Start and Stop with key in OFF position
Manual Start and stop
Emergency stop button on panel board
Remote emergency stop
Remote lock
Remote test without load
Remote test on load
Scheduled start-ups
MODBUS commands (Start, Stop, Reset, Test)

**CONTROL MODULE SPECIAL FUNCTIONS (on demand)**
Automatic charging of an external battery
Dummy load (4)
Load shedding (4)
Redundant starter motor management
Fuel monitoring
GS battery Load test
Idle mode
Service phone number indication
Variable speed Generator
Master / Slave mode

(1) Present with the sensor installed on engine
(2) Present according to the engine equipment and to the ECU type (ECU - Canbus)
(3) Present only with the residual current device mounted on genset board
(4) Present with optional expansion modules
(5) Present with special function activated
(6) Only with the optional of the automatic fuel refilling system on board
(7) Only in AMF mode

AAABBB

# OPTIONAL

## Fuel Supply

| | | |
|---|---|---|
|  | **O.G-ACO-AT-C3V-02** | External fuel tank connections with 3-way valve for supply from internal or external tank (130/700 kVA) |
|  | **O.G-ACO-AT-C3V-AR-02** | Quick coupling connectors with 3-way valve for internal or external fuel tank connection (130/700 kVA) |
|  | **O.G-ACO-AT-CI-02** | External tank connections for supply only from external tank (g without tank) GE 130/700 |
| | **O.G-ACO-BT-C4700-1900** | 1900 Lt Oversized Fuel Tank on board for SS (450/700 kVA), (Increased weight and size) |
| | **O.G-ACO-BT-C4700-2500** | 2500 Lt Oversized Fuel Tank on board for SS, RB (450/700 kVA) |
|  | **O.G-ACO-GA-01** | Mechanical analogue float for internal fuel tank on board |
|  | **O.G-ACO-GA-02** | Electrical analogue float to monitor the external refilling point on board |
|  | **O.G-ACO-RE-02** | External refilling point for Gen Sets 275/400 kVA, SS, RB versions |
|  | **O.G-ACO-RE-SP-02** | External refilling point with warning light for Gen Sets 275/800 kVA, SS, RB versions |
|  | **O.G-ACO-ST-2P** | Double redundant electric pump kit for automatic fuel refilling system |
|  | **O.G-ACO-ST-BG-ES1** | "Easy" automatic fuel refilling system on board, controlled by QPE-C and QLE-B panels |
| | **O.G-ACO-ST-BG-HDT** | "Heavy Duty" automatic fuel refilling system on board, controlled by QPE-C and QLE-B panels |
|  | **O.G-ACO-ST-BG-STD** | "Standard" automatic fuel refilling system on board, controlled by QPE-C and QLE-B panels |

## Alternator

| | | |
|---|---|---|
| | **O.G-ALT-AL-CHBR-05** | Different brand alternator 450/700 kVA (Check dimensions) |
|  | **O.G-ALT-AL-COTE-01** | Temperature control unit up to 4 x PT100 probes for MC4 management |

## Test

| | | |
|---|---|---|
| | **MS.CP-LT-03** | FAT - Factory Acceptance Test for single Gen Set from 450 to 700 kVA according to our standard procedures in Elcos factory (max 2 hours - max 4 people - max 1 hour of operation) |
| | **MS.CP-SP-03** | FAT - Factory Acceptance Test for single custom Gen Set from 450 to 700 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 ) |

| | | |
|---|---|---|
|  | **MS.CP-ST-03** | FAT - Factory Acceptance Test for single Gen Set from 450 to 700 kVA according to our standard procedures in Elcos factory (max 4 hours - max 4 people - max 2 hour of operation) |
|  | **MS.RF-ST-02** | Noise test report for single Gen Set from 250 to 700 kVA |
|  | **MS.TV-ST-02** | Vibration test on 10 points with certificate for single Gen Set from 275 to 3000 kVA |

## 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

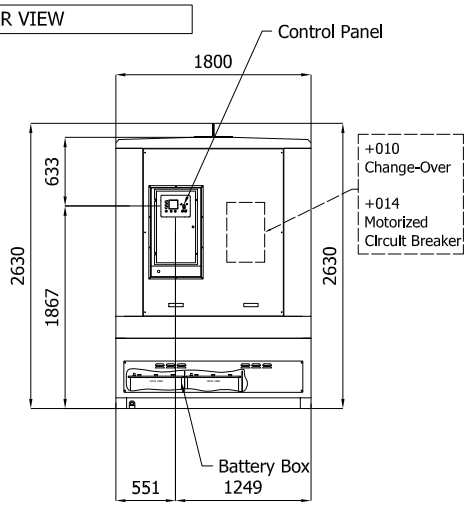
## LTP

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.

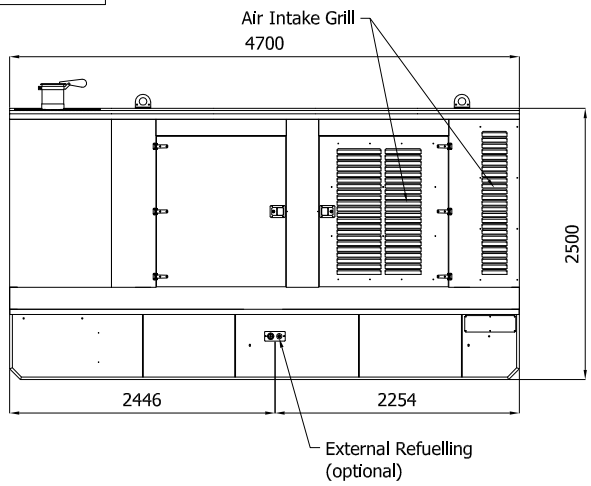
| Sheet: | C4700.PROV | SUPER SILENT | Exhaust side: | . | Type: | STANDARD | Rev: | 01 | Last Update: | Oct 14, 2019 | Page 1/2 |
|---|---|---|---|---|---|---|---|---|---|---|---|

# OVERALL DIMENSIONS [mm]

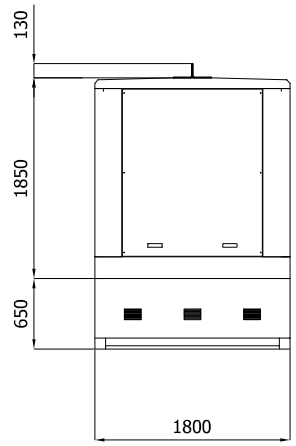
## REAR VIEW



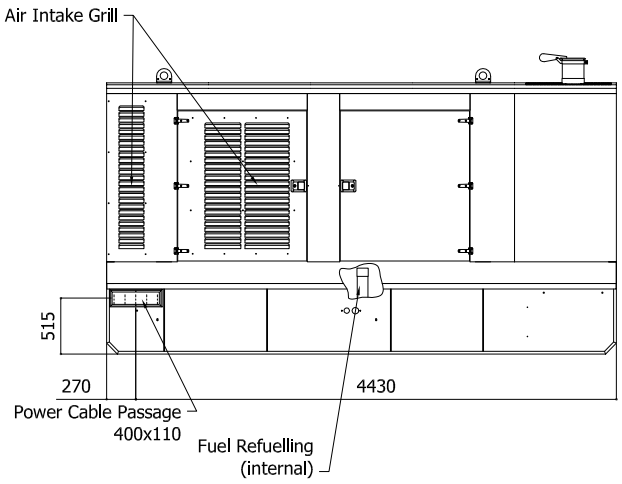

## LEFT SIDE VIEW



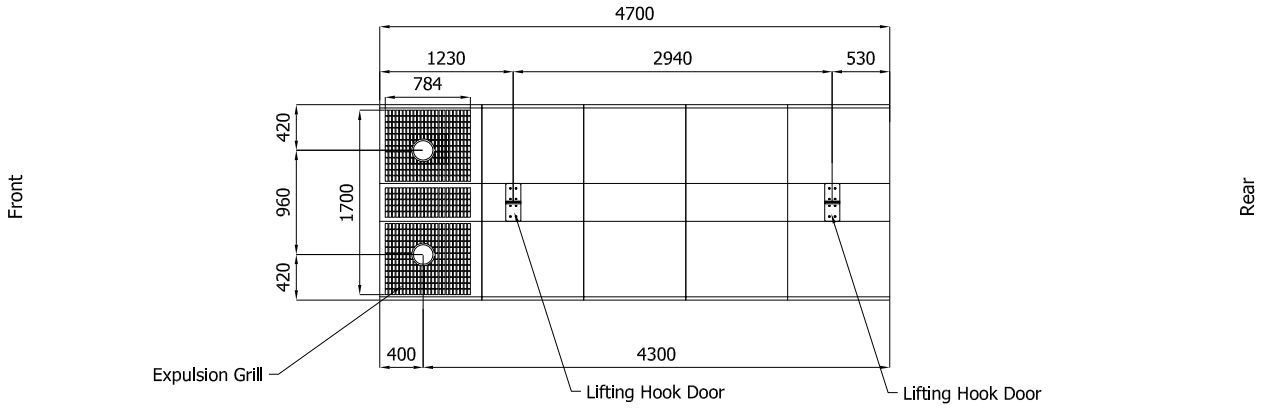

## FRONT VIEW




## RIGHT SIDE VIEW




## TOP VIEW




IMPORTANT:
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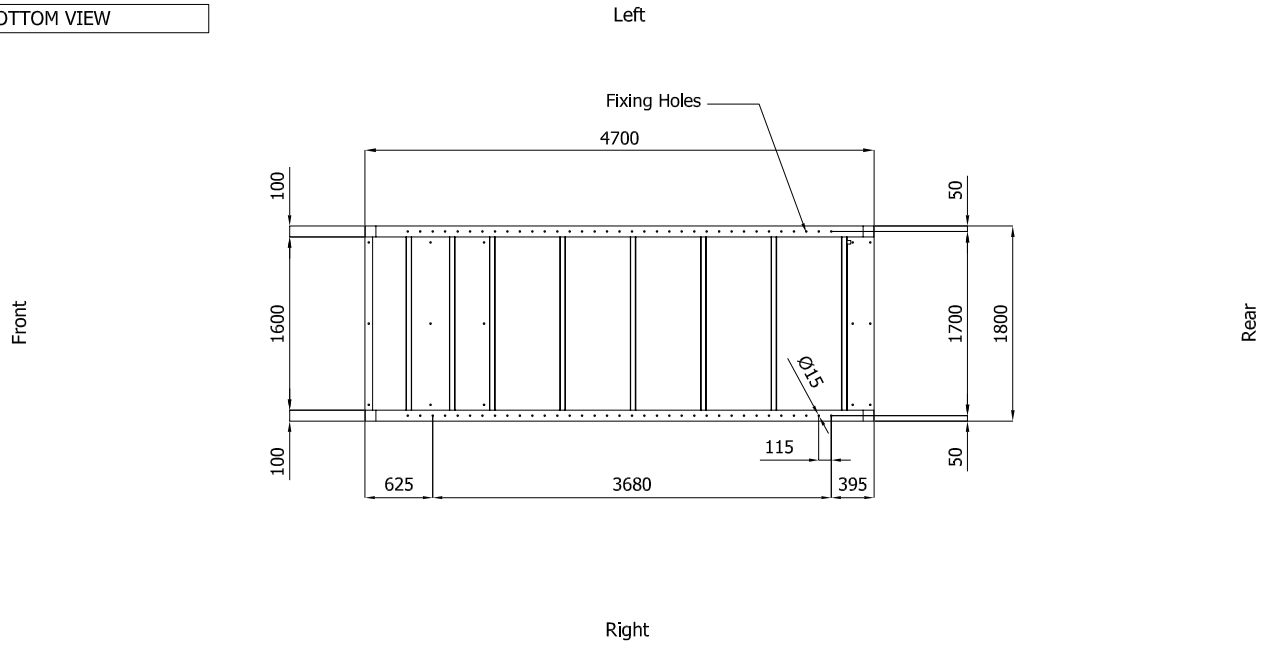
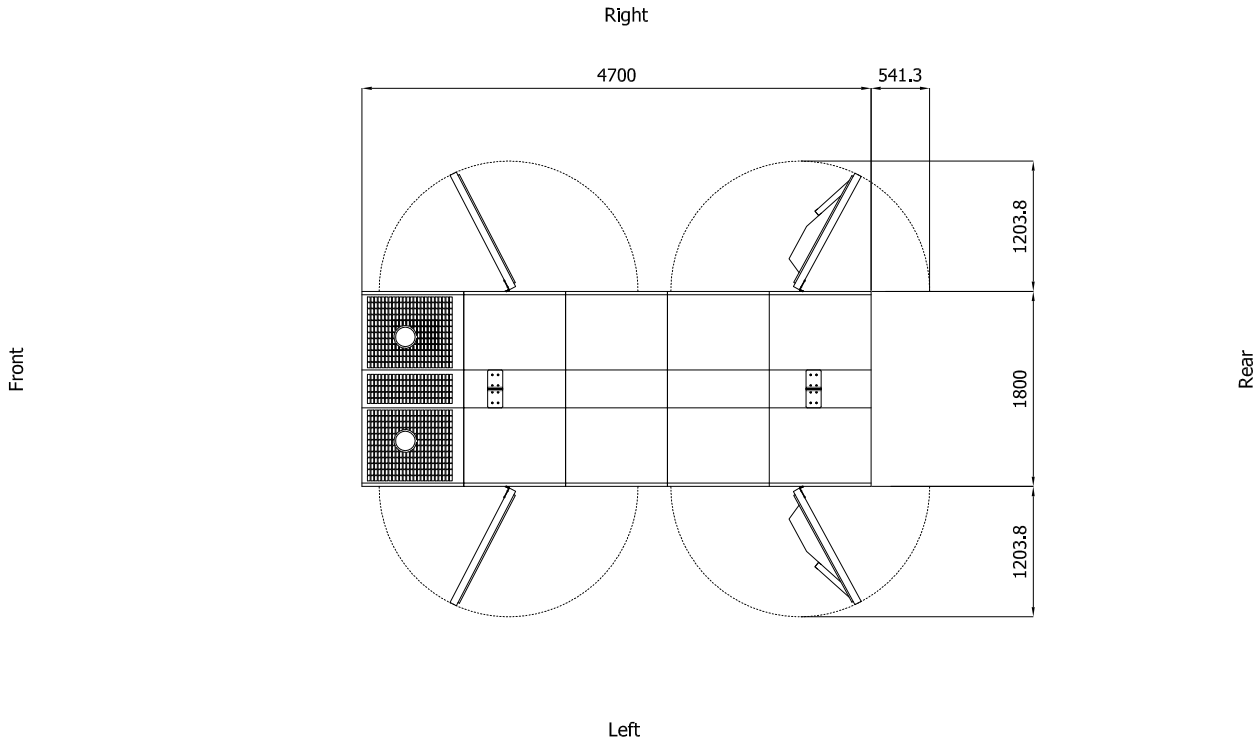
| Sheet: | C4700.PROV | SUPER SILENT | Exhaust side: | . | Type: | STANDARD | Rev: | 01 | Last Update: | Oct 14, 2019 | Page 2/2 |
|---|---|---|---|---|---|---|---|---|---|---|---|

BOTTOM VIEW




## DIMENSIONS WITH OPEN DOORS [mm]




Note: With Lifting-Off Door Solution consider only canopy dimensions.
(Models with "Control Panel" behind rear door will mount a special cover to protect it)

## VENTILATION OF THE ROOM

The windows area in the generating set room needs to be (recommended):
Aspiration: 2.20m2
Expulsion: 1.60m2
ATTENTION: for a correct ventilation the expulsion air and the exaust gas needs to be conveyed in the open-air

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