European Engineering

General specifications of the generating set

PRP power	kVA/kWe	160/128
STP power	kVA/kWe	176/141
Engine revolutions	r.p.m	1500
Voltage type		Three-phase
Standard voltage	V	400/230
Optional voltages	V	Please, contact us
Frequency	Hz	50
Power factor	cos φ	0,8
Fuel		Diesel
Tank (open version)	l	300
Tank (soundproof version)	l	500

Denomination

GEN 2500 H C

- GEN: type of generating set
- 2500: stand-by power (kVA)
- H: engine´s manufacturer
- C: soundproof version

- Engine-alternator assembly with flexible disk, mono-block direct coupling.
- Folded steel base frame, electro-welded and painted with a primer coat and a two-component finish coat.
- Rubber anti-vibration system between the mono-block and the base frame.
- Guards for moving parts
- Guards for hot parts.
- Exhaust gas silencer -25dB with flexible and connecting clamps to the engine in open version and -30dB integrated within the canopy in soundproof version.
- Engine pre-heater in automatic or parallel operation (range 5-20kVA, optional).
- Control panel.
- Automatic battery charger in automatic or parallel operation generating sets.
- Four-pole circuit breaker.
- Emergency stop push button.
- Generator's electrical grounding installation (ground spike not included).

EC marking directives and applicable standards

- 2006/42/EC on Machine Safety.
- 2006/95/EC Low Voltage Directive.
- 2004/108/EC on Electromagnetic Compatibility.
- 2000/14/EC on Noise – Equipment for Use Outdoors (amended by 2005/88/EC).
- EN 12100, EN 13857, EN 60204

Reference environmental conditions in accordance with Standard ISO 8528-1:2005
1000mbar, 25ºC, 30% relative humidity.

Prime Power (PRP)
In accordance with ISO 8528-1:2005, this is the maximum power available for a variable power sequence for an unlimited number of hours while in compliance with the maintenance schedules prescribed by the manufacturer and under such conditions as defined by the same. Permissible average power for a period of 24 hours shall not exceed 70% of PRP. 10% overload is allowed for 1 hour out of every 12h (STP).

Emergency Standby Power (ESP)
In accordance with ISO 8528-1:2005, this is the maximum power available for a variable power sequence in the event of a mains failure or under test conditions which shall not exceed 200h/year and in compliance with the maintenance schedules prescribed by the manufacturer and under the environmental conditions defined by the same. Permissible average power for a period of 24 hours shall not exceed 70% of ESP. No overload is allowed.

GENESAL reserves the right to modify any feature without notice.

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ISO 9001 · UNE 166002 · ISO 14001

MS(I 16/05/2017 8:54 GEN176FC_400-230V_50Hz_NEF67 TM4_ECP 34-3I4A

Engine specifications

Manufacturer		Iveco
Model		NEF67 TM4
Displacement	l	6,7
Engine revolutions	r.p.m.	1500
Operating cycle	Strokes	4
Cylinders	No.	6
Bore	mm	104
Stroke	mm	132
Compression ratio		17,5:1
Cylinder arrangement		L
PRP net power	kWm	149,7
STP net power	kWm	165
Induction system		Turbocharged
Intake air flow	m^3/h	586
Exhaust gas flow	m^3/h	1724
Exhaust gas temperature	ºC	497
Maximum allowable back pressure	kPa	5
Type of cooling		Air/Water
Type of cooling liquid		Ethylene glycol 50%
Total coolant capacity	l	25,5
Cooling air flow	m^3/h	13680
Total oil capacity	l	17,2
Starting system	V	12
Battery	Ah	1x95
Starter motor power	kW	3
Fuel consumption		
100% of load	l/h	36,6
75% of load	l/h	29,4
50% of load	l/h	18
Speed regulator		Mechanical

Optional components

- Automatic fuel transfer system.
- Air intake and outlet sound attenuators of -30dB.
- Additional fuel tanks.
- Greater attenuation exhaust gas silencer.
- Electronic speed governor for engines which include a mechanical control as a standard.
- Low coolant level sensor for engines that do not include it as a standard.
- Low oil level sensor in engines that do not include it as a standard.
- Hoppers, bellows and cooling air ducts.
- Exhaust gas pipes.
- Others (please contact us)

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Specifications of the alternator

Manufacturer		Mecc Alte or similar
Model		ECP 34-2L4C
Poles	No.	4
Threads	No.	12
Insulation rating	Class	H
IP protection rating	Class	23
Excitation system		Self-excited, brushless
Voltage regulator		AVR with potentiometer
Type of coating		Vacuum impregnation
PRP power	kVA	160
STP power	kVA	176
Alternator revolutions	r.p.m.	1500
Frequency	Hz	50
Power factor	cos φ	0,8
Efficiency at 100% load	%	93,5
Short-circuit capacity	%	300% In (20s)
Cooling air flow	m^3/h	1158

Optional components

- Tropicalized and marine varnish for protection.
- Anti-condensation heater.
- Differential protection.
- PT100 probes.
- Elastic coupling.
- Other (please contact us)

Manual/ automatic control unit (GEINTEL)

The GEINTEL control unit can start the generating set through a manual signal, an external signal or when detecting a mains voltage failure through its three-phase sensor. It features a screen displaying all the parameters of the generating set and the grid, as well as protection alarms. It keeps an event log with all events that have occurred (last 119 events). It manages the operating orders of switchover, whether it is manual or automatic.
It includes a microprocessor and software for the manager of the parameter of the generating set, the alarms, the measurement devices, and can also be started for no-load tests.

Parallel operation control unit (GEINTEL P)

Parallel operation control unit GEINTEL P manages the synchronization among generating sets or synchronization to the grid, depending on the option selected.
The start of the generating set(s) may occur because of a voltage failure or an external order.
In the event of parallel operation of generating sets, several operation modes are possible as the control unit allows for different configurations, including the starting of all the generators in the plant regardless of the load, connecting-disconnecting generators on the basis of load, maintain all sets in operation on safety grounds, etc.
In the event of synchronizing the generating set to the grid, the main modes of operation are as follows:

- Prevent the second zero in the switching when power returns.
- Synchronizing for connecting or disconnecting the installation and the generating set(s) or vice versa
- Exporting to the grid.
- Supplementing mains power, etc.

It includes a screen displaying the parameters of the generating set, the grid and synchronization as well as protection alarms, and keeps an event log of all the event that have occurred (the last 119 events). It manages the operating orders for switching whether in the automatic or manual mode.
It includes a microprocessor and software for the management of the parameter of the unit, alarms, and external measuring devices, and may be started for no-load tests.

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Technical specifications of the control unit

		GEINTEL	GEINTEL P
GENSET READINGS	Voltage between phases	•	•
	Voltage between phase and neutral	•	•
	Amperage	•	•
	Frequency	•	•
	Apparent power (kVA)	•	•
	Active power (kW)	•	•
	Reactive power (kVAr)	•	•
	Power factor	•	•
GRID READINGS	Voltage between phases	•	•
	Voltage between phase and neutral	•	•
	Amperage	X	•
	Frequency	•	•
ENGINE READINGS	Coolant temperature	•	•
	Oil pressure	•	•
	Level of fuel (%)	•	•
	Battery voltage	•	•
	RPM	•	•
	Battery charge alternator voltage	•	•
ENGINE PROTECTION	High water temperature	•	•
	High water temperature sensor	•	•
	Low oil pressure	•	•
	Low oil pressure sensor	•	•
	Low level of water	•	•
	Fuel reserve	•	•
	Fuel reserve sensor	•	•
	Failed to stop	•	•
	Battery power loss	•	•
	Batter charge alternator failure	•	•
	Overspeed	•	•
	Underfrequency	•	•
	Failed start-up	•	•
	Emergency stop	•	•
ALTERNATOR PROTECTION	High frequency	•	•
	Low frequency	•	•
	High voltage	•	•
	Low voltage	•	•
	Short circuit	•	•
	Asymmetry between phases	•	•
	Incorrect sequence of phases	•	•
	Reverse power	X	•
	Overload	•	•
	Loss of generating set signal	•	•

• Standard ◦ Optional X Not included

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Technical specifications of the control unit

		GEINTEL	GEINTEL P
MEASUREMENT	Total hours counter	•	•
	Kilowatt meter	•	•
	Valid start-up meter	•	•
	Maintenance	•	•
COMMUNICATIONS	RS232	•	•
	RS485	◦	◦
	Modbus IP	◦	◦
	Modbus	•	•
	Software for PC	•	•
	GSM/GPRS modem	◦	◦
	Remote screen	◦	◦
	Signal expansion module (optional)	8+8+3A	8+8+3A
	J1939	•	•
FEATURES	Alarms history	>115	>115
	External start	•	•
	Start disabling	•	•
	Mains failure start	•	•
	Generator contactor activation	•	•
	Mains and Generator contactor activation	•	•
	Fuel transfer control	•	•
	Generating set forced operation	•	•
	Programmable alarms	•	•
	Starting the generator in test mode	•	•
	Programmable outputs	•	•
	Multilingual	•	•
SPECIAL APPLICATIONS	GPS tracking	◦	◦
	Synchronism	X	•
	Synchronism with the mains	X	•
	Suppression of second zero	X	•
	Replicated panel	◦	◦

• Standard ◦ Optional X Not included

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Automatic switchboard (optional)

Mains- generating set switchboards are of 2 types:

1 - Those using contactors

- From 25A to 110A.
- Mechanical and electrical interlock.
- Mounted on a metal enclosure or on a mounting plate.
- Terminal block for manoeuvre, mains and service detection.

2 - Those using motorized disconnectors

- From 125A up to 3200A.
- Mechanical and electrical interlock.
- The automatic operation mode is controlled by potential free dry contacts.
- Three stable positions (I,0,II), with padlocking option.
- Disconnection shall be plainly visible
- Automatic switch under load.
- Manual emergency operation.
- AUTO/MANUAL selector switch.
- Mounted on a metallic enclosure or on a mounting plate.

Complies with the following regulation

- IEC 60947-3
- EN 60947-3
- NBN EN 60947-3
- BS EN 60947-3
- GB 14048
- IEC 60947-6-1
- EN 60947-6-1
- NBN EN 60947-6-1
- BS EN 60947-6-1
- VDE 0660-107

Characteristics and dimensions

Current	A	400
Dimensions (Height x Width x Depth)	mm	800x600x300
Weight	Kg	85

Switching by contactors

Switching by disconnectors

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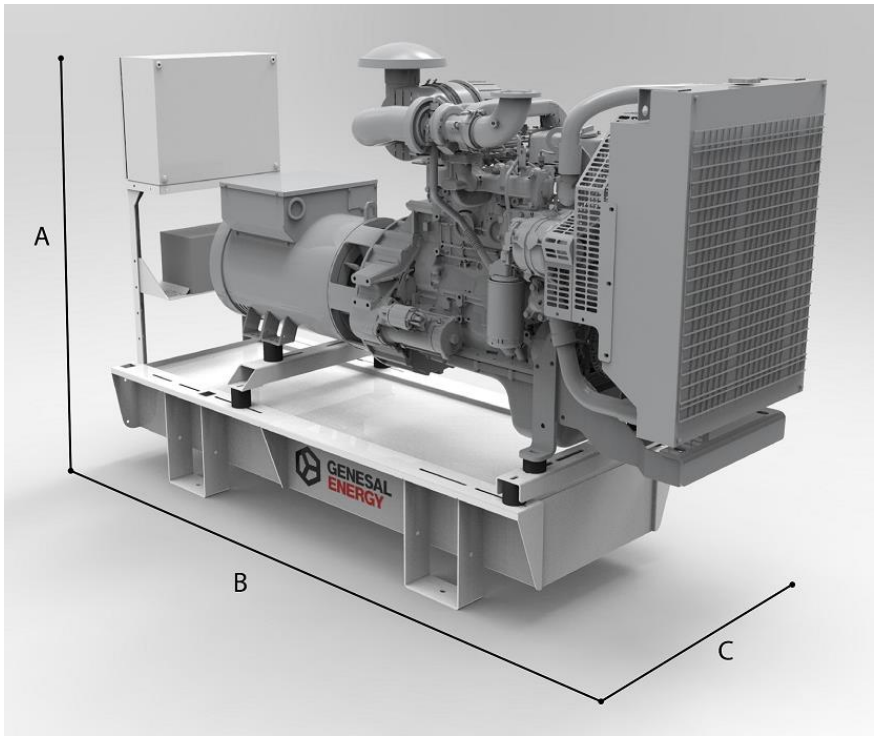
Generating set overall dimensions

Open version

GEN176F		
Height (A)	mm	1750
Length (B)	mm	2661
Width (C)	mm	820
Weight	kg	1275



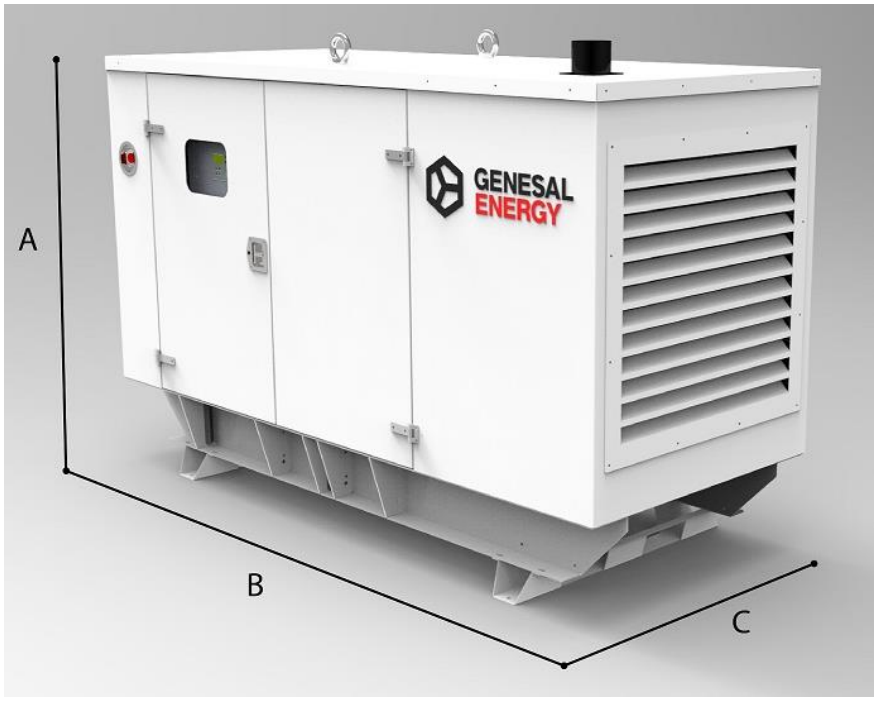
Optional components

- Greater capacity tank.
- Special-size base frame.
- Compliance with earthquake regulations.
- Colour to customer specification
- Special treatments for aggressive environments.
- Other (please contact us)

Soundproof version

Modular, soundproof canopy made of galvanised sheet steel. It has large, removable soundproof doors with sound-absorbing material so that access to the inside of the machine whether for inspection or maintenance purposes is easy. Locks (with single key) and stainless steel hinges. It has been painted with a priming coat and a two-component acrylic-polyurethane finish. Sound power level in accordance with Directive 2000/14/EC.

GEN176FC		
Height (A)	mm	1980
Length (B)	mm	3408
Width (C)	mm	1358
Weight	kg	2100



Optional components

- Removable doors.
- Upper air outlet.
- Greater capacity tank.
- Aluminium or stainless steel canopy
- Colour to customer specification
- Special treatments for aggressive environments.
- Compliance with earthquake regulations.
- Other (please contact us)

Dimensions and weight correspond to the standard version of the product.

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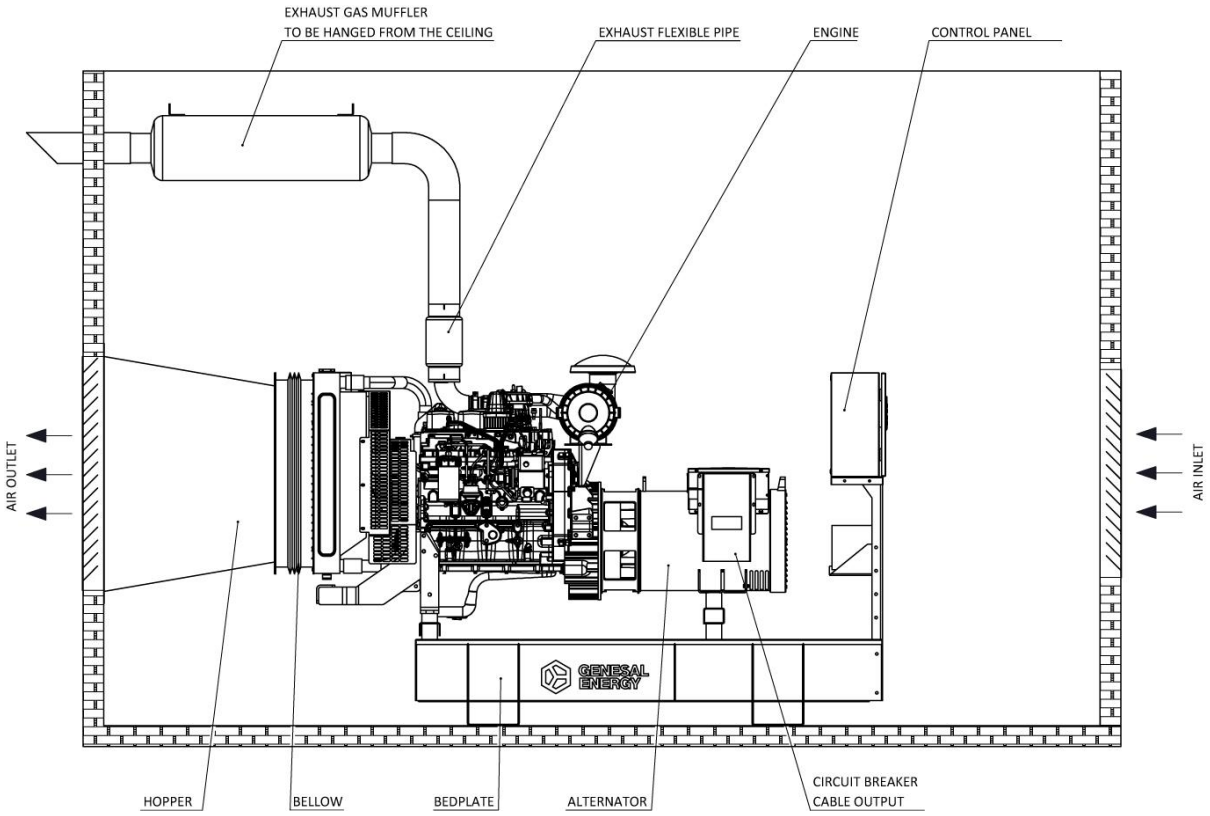
Recommended dimensions for the indoor installation of the open generating set

Minimum room dimensions			Dimensions for ventilation and exhaust gases		
Length	mm	4661	Outlet louvers	m^2	0,65
Width	mm	2820	Inlet louvers	m^2	0,77
Height	mm	2750	Exhaust gas outlet	mm	139



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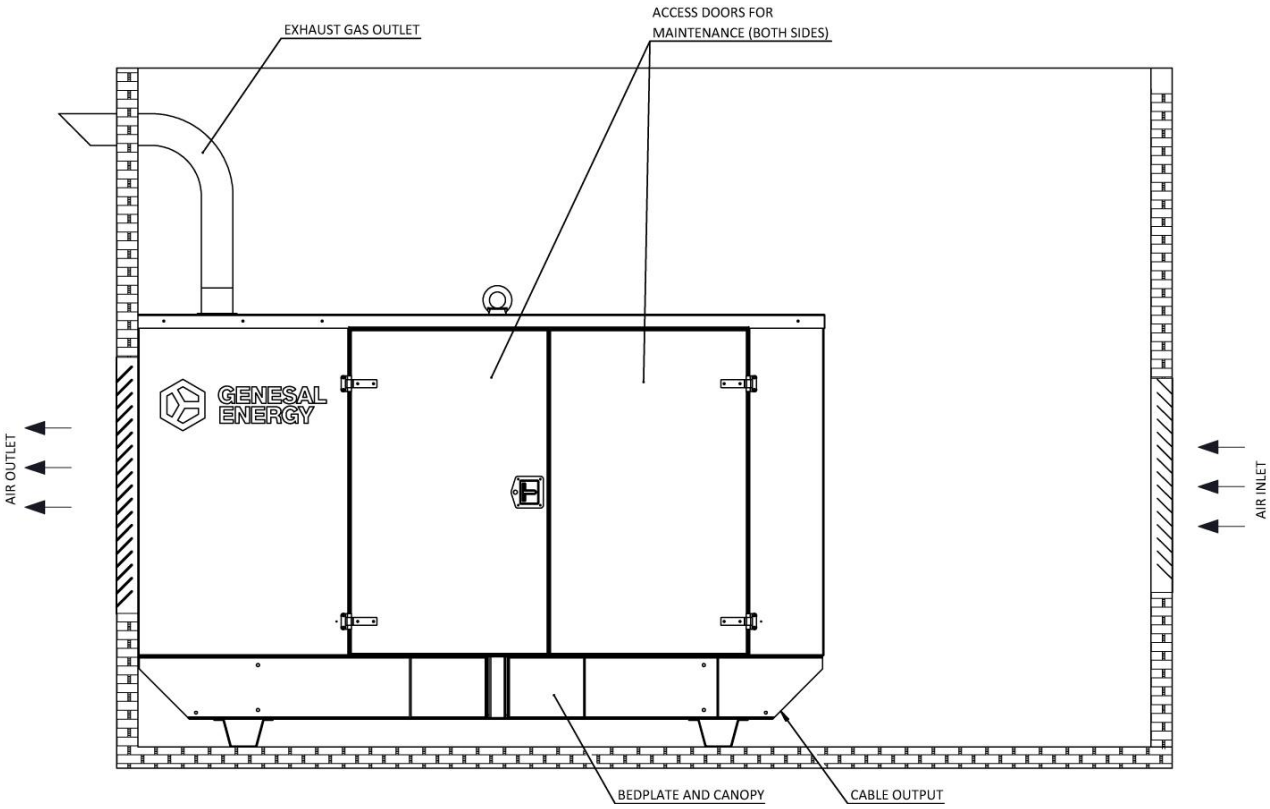
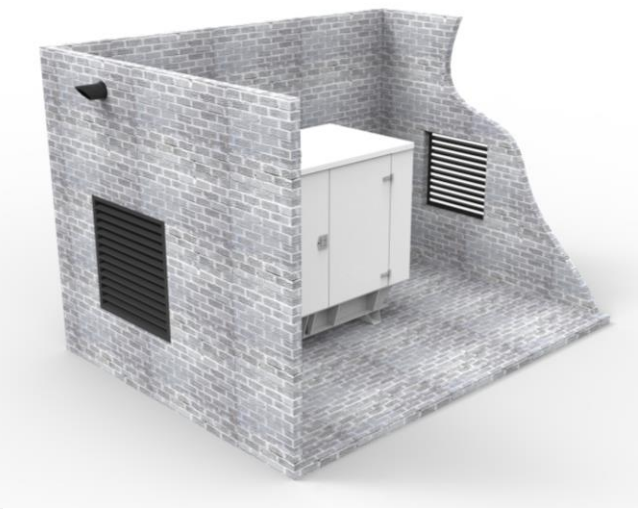
Recommended dimensions for the indoor installation of the soundproof generating set

Minimum room dimensions			Dimensions for ventilation and exhaust gases		
Length	mm	4408	Outlet louvers	m^2	0,85
Width	mm	3358	Inlet louvers	m^2	0,77
Height	mm	2980	Exhaust gas outlet	mm	160





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