Guascor Energy

Guascor Energy Marine Electric Propulsion Gensets

1. Power Definition

Guascor Energy diesel engines ratings stated in this document are based on ISO3046-1:2002(E), ISO3046-3:2006(E) and ISO15550:2002(E) standards. These ratings have been measured (including all engine driven mechanical pumps).

Our Guascor Energy diesel engines are designed following the reference conditions. On vessels approved and/or surveyed by IACS members, “standard design conditions” are to be observed.

Standard reference conditions ISO 15550:2002

- Total barometric pressure: 100 kPa / 1.000 mbar
- Air temperature: 25ºC (77ºF) / 298 K
- Relative humidity: 30%
- Charge air coolant (raw): 25ºC (77ºF) / 298 K
- Charge air coolant (treated): 29ºC (84ºF) / 302 K

Standard design conditions ISO 3046-1:2002 & 3046-3:2006

- Total barometric pressure: 100 kPa / 1.000 mbar
- Air temperature: 45ºC (113ºF) / 318 K
- Relative humidity: 60%
- Charge air coolant (raw): 32ºC (89ºF) / 305 K
- Charge air coolant (treated): 36ºC (96ºF) / 309 K

2 Rating Definition

Diesel Electric Propulsion

COP (continuous power)

Rated power (ISO8528) intended for continuous use in applications requiring uninterrupted service with high load factors for an unlimited number of hours per year; 10% overload available in a period of time of 1/12 operation hours and maximum 25 h/year

- Typical load factors: <80% of rated power 100% of time or 24/24h.
- Overload: 110% overload available 1/12h and max. 25 h/year.
- Operation time: 5.000 - 8.000 h/year.
- Typical applications: Ferries, research vessels, passenger cruiser, tugboats, offshore vessels, freighters, and tankers.

3. Fuel Consumption

The fuel consumption values published in this document have been calculated according to ISO8178 standard E2 test cycles for auxiliary applications. These values must be considered as indicative guidance but not considered absolute values. Fuel consumption may vary as it can be influenced by external factors such as ship application, different environmental conditions, particular propeller design, hull form, etc.

E2 Test Cycle: Main propulsion engines at constant speed

Conditions	1	2	3	4
% Speed	100	100	100	100
% Power	100	75	50	25
Weight Factor	0.20	0.50	0.15	0.15

Fuel consumption rates are based on ISO3046-1 with a tolerance of +5% and is based on diesel gasoil B with LHV 42.700 KJ/kg (18.358 Btu/lb) when used at 29ºC (85ºF) and weighing 836 g/liter (6.977 lb/US gal).

4. Emission Certifications

IMO (International Maritime Organization)

On January 1, 2000, annex VI of MARPOL 73 / 78 went into effect for all marine diesel engines above 130 kW / 177 HP installed on vessels whose keel is laid after January 1 and which do not operate exclusively in national waters. Current revision (Tier II) entered into force from January 1, 2011.

The Tier III, in force since January 1, 2016, applies only to the specified ships while operating in Emission Control Areas (ECA) established to limit NOx emissions, outside such areas the Tier II controls apply.

- IMO applies to sea going vessels and on engines rated above 130 kW / 177 mHP.
- Emergency on-board engines are exempt to accomplish IMO regulations.

IMO Tier III includes proprietary SCR Design

CCNR (Central Commission for the Navigation on the Rhine)

Effective January 1, 2003, the CCNR regulates exhaust emissions limits for all marine diesel engines above 37kW / 50HP installed on inland waterway-going vessels running through the Rhine or its tributary rivers. Members of the CCNR include: Belgium, Netherlands, Germany, France, Luxembourg, and Switzerland. Current revision (CCNR II) entered into force effective January 1, 2007.

- CCNR rules apply to inland waterway-going vessels and on engines rated above 37 kW / 50 mHP.
- Equivalent to EU directive for non-road mobile machinery 97/68/ EC, as amended by directive 2004/26/EC, mutual recognition agreement effective July 1, 2007.

5. Marine Classification Societies

Guascor Energy marine engines, gen-sets and gear boxes are designed and built according to the rules of major marine classification societies worldwide. Approvals from major marine classification societies worldwide include:

- **ABS** American Bureau of Shipping
- **BV** Bureau Veritas
- **LR** Lloyds Register

Some marine products or ratings may differ depending upon class society.

For more information on emission or marine classification society certifications, please contact your local Guascor Energy sales representative.

6. Abbreviations

This document contents the following abbreviations which will appear on subsequent pages to identify the emission regulation compliance of each engine type and/or rating.

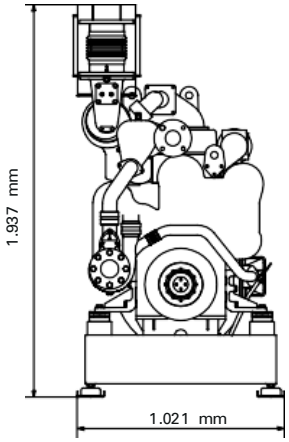
- IMO II IMO Tier II compliant; EIAPP certificates available
- IMO III IMO Tier III compliant; EIAPP certificates available
- CCNR2 CCNR Stage II compliant
- COP Continuous power
- V Volt
- kW Kilowatt
- KVA Kilovolt amper

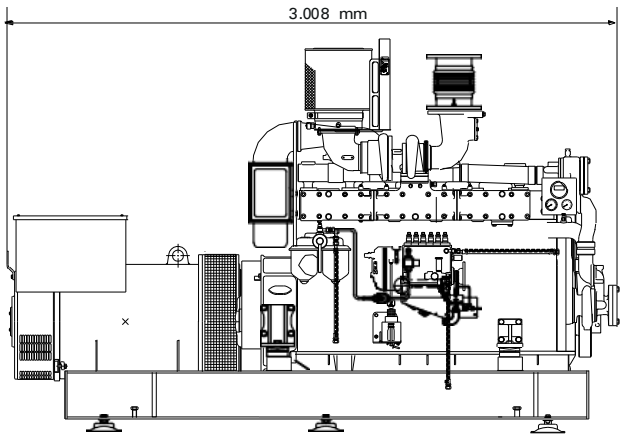
Extensions of this information should be compared with the specifications indicated in the mentioned standards.

All technical information and data within this document is subject to modification without prior notice.

F/SF180 Series

Marine Electric Propulsion Genset





Main data

Cycle (ISO 8178)	E2 (diesel - electric propulsion)
Disposition / Displacement	6 L / 17,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel
Combustion system	Direct injection
Generator characteristics	Synchronous
Voltage regulation	AVR electronic
Excitation	AREP self-excited, brushless
Generator protection	IP23
Heating class	F
Insulation class	H
Construction	Simple bearing

DEP generator set COP ratings

Engine model	Speed (f)	Electrical power (cosφ 0,8)		Voltage	Fuel consumption (ISO 8178)	Emissions
		kVA	kWe	V	L/h	
F180TA	1.500 (50Hz)	345	276	380 / 400	50,6	IMO II / IMO III
SF180TA		400	320		64,1	
		460	368		66,0	
F180TA	1.800 (60Hz)	400	320	450 / 480	62,4	IMO II / IMO III
SF180TA		440	352		76,6	
		520	416		77,7	

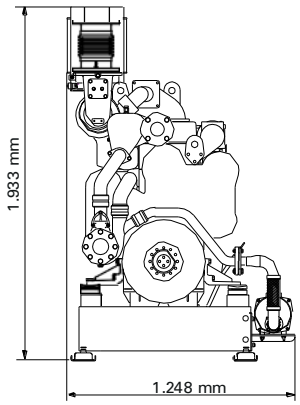
Weight

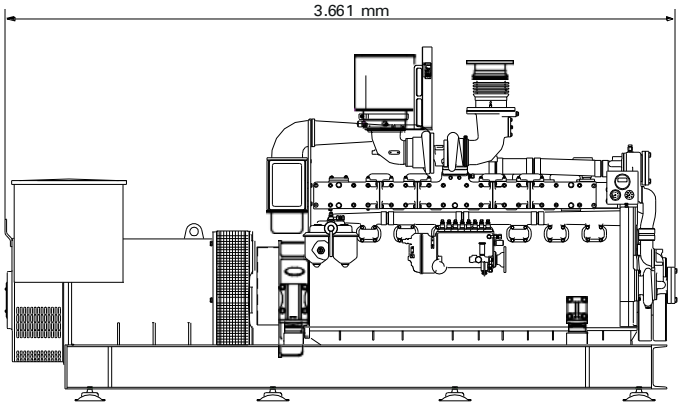
Dry weight (kg)	4.410

Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF240 Series

Marine Electric Propulsion Genset





Main data

Cycle (ISO 8178)	E2 (diesel - electric propulsion)
Disposition / Displacement	8 L / 23,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel
Combustion system	Direct injection
Generator characteristics	Synchronous
Voltage regulation	AVR electronic
Excitation	AREP self-excited, brushless
Generator protection	IP23
Heating class	F
Insulation class	H
Construction	Simple bearing

DEP generator set COP ratings

Engine model	Speed (f)	Electrical power (cosϕ 0,8)		Voltage	Fuel consumption (ISO 8178)	Emissions
		kVA	kWe	V	L/h	
F240TA	1.500 (50Hz)	500	400	380 / 400	70,8	IMO II / IMO III
		600	480		83,9	
SF240TA		640	512		88,7	
F240TA	1.800 (60Hz)	600	480	450 / 480	85,8	IMO II / IMO III
SF240TA		650	520		102,7	
		675	540		100,3	CCNR2
		690	552		104,7	IMO II / IMO III

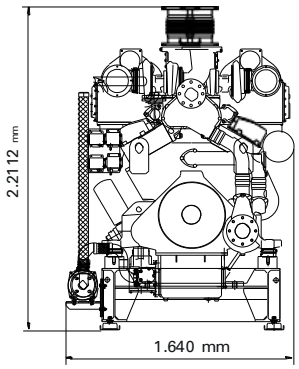
Weight

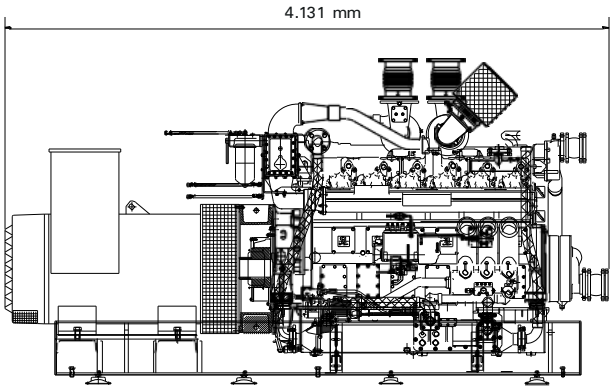
Dry weight (kg)	5.530

Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF360 Series

Marine Electric Propulsion Genset





Main data

Cycle (ISO 8178)	E2 (diesel - electric propulsion)
Disposition / Displacement	12 V / 35,93 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel
Combustion system	Direct injection
Generator characteristics	Synchronous
Voltage regulation	AVR electronic
Excitation	AREP self-excited, brushless
Generator protection	IP23
Heating class	F
Insulation class	H
Construction	Double bearing

DEP generator set COP ratings

Engine model	Speed (f)	Electrical power (cosϕ 0,8)		Voltage	Fuel consumption (ISO 8178)	Emissions
		kVA	kWe	V	L/h	
F360TA	1.500 (50Hz)	700	560	380 / 400	99,4	IMO II / IMO III / CCNR2
SF360TA		860	688		128,5	
		950	760		133,7	
		1000	800		140,9	
F360TA	1.800 (60Hz)	830	664	450 / 480	123,2	IMO II / IMO III / CCNR2
SF360TA		950	760		149,8	
		1.050	840		152,3	

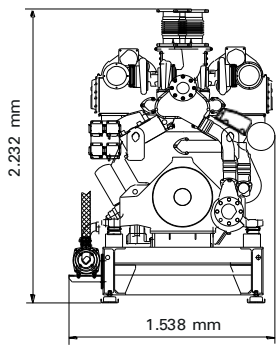
Weight

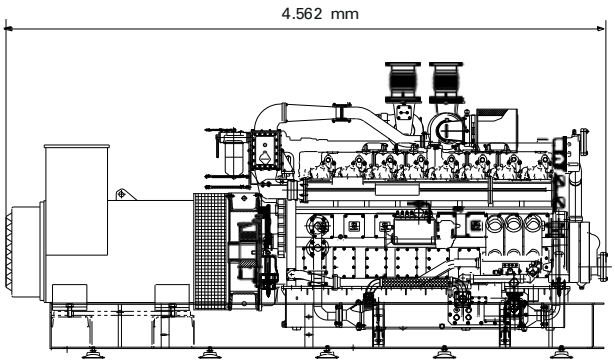
Dry weight (kg)	8.800

Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF480 Series

Marine Electric Propulsion Genset





Main data

Cycle (ISO 8178)	E2 (diesel - electric propulsion)
Disposition / Displacement	16 V / 47,90 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel
Combustion system	Direct injection
Generator characteristics	Synchronous
Voltage regulation	AVR electronic
Excitation	AREP self-excited, brushless
Generator protection	IP23
Heating class	F
Insulation class	H
Construction	Double bearing

DEP generator set COP ratings

Engine model	Speed (f)	Electrical power (cosφ 0,8)		Voltage	Fuel consumption (ISO 8178)	Emissions
		kVA	kWe	V	L/h	
F480TA	1.500 (50Hz)	1.000	800	380 / 400	140,9	IMO II / IMO III / CCNR2
SF480TA		1.100	880		169,2	
		1.250	1.000		174,0	
F480TA	1.800 (60Hz)	1.100	880	450 / 480	166,6	IMO II / IMO III / CCNR2
SF480TA		1.300	1.040		202,7	
		1.400	1.120		206,9	

Weight

Dry weight (kg)	9.840

Dimensions and weight may vary depending upon engine configuration.
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Oikia, 44
20759 Zumaia (Gipuzkoa) Spain PO Box 30
Tel: (Int'l +34) 943 86 52 00
Fax: (Int'l +34) 943 86 52 10

www.guascor-energy.com

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