Guascor Energy

Guascor Energy Marine Power Generation Engines

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: 25°C (77°F) / 298 K
- Relative humidity: 30%
- Charge air coolant (raw): 25°C (77°F) / 298 K
- Charge air coolant (treated): 29°C (84°F) / 302 K

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

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

2. Rating Definitions

Propulsion at constant speed

A - Rating (unrestricted continuous duty)

Rated power intended for continuous use in applications requiring uninterrupted service with high load factors; this is an ISO standard (continuous) fuel stop power (ICFN)

Typical load factors:	80-100% of rated power
Full load operation time:	100% of time or 24/24h
Operation time:	5.000 - 8.000 h/year
Operation type:	Displacement hull vessels for unrestricted use at full speed and load
Typical applications:	Fishing trawlers, bottom trawlers, freighters, ankers, tow & push boats, long distance ferries, dredgers, cabin cruiser, research vessels

3. Fuel Consumption

The fuel consumption values published in this document have been calculated according to ISO8178 standard E 2 test cycles for propulsión engines applications at constant speed. 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 a constant speed

Mode Number	1	2	3	4	5
% 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 29°C (85°F) 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.

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

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.

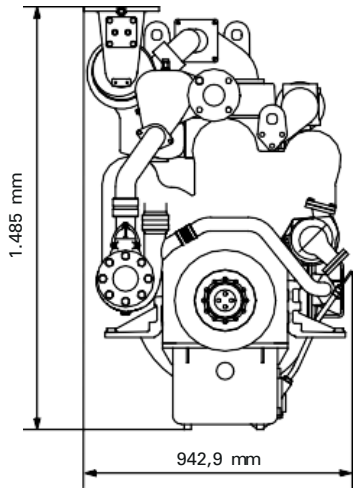
- IMO2 IMO Tier II compliant; EIAPP certificates available since January 1, 2011
- CCNR2 CCNR Stage II compliant
- kWb Mechanical kilowatt
- mHP Horse Power

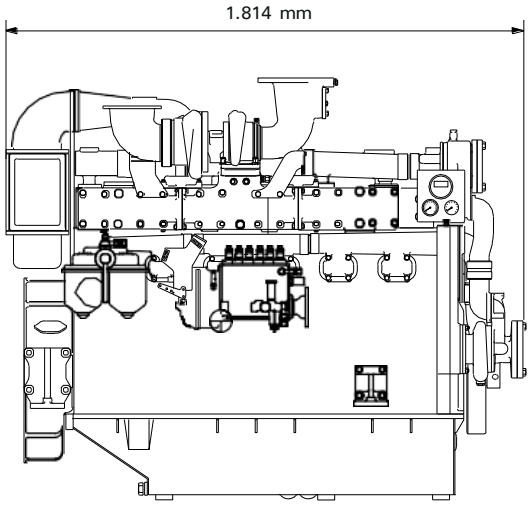
Extensions of this information should be compared with the specifications indicated in the mentioned standards.

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

F/SF180 Series

Marine Power Generation Engines





Main data

Cycle (ISO 8178)	E2 (propulsion constant speed)
Disposition / Displacement	6 L / 17,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Turbocharged – aftercooled
Rotation (from flywheel)	Counterclockwise

Propulsion rating at constant speed

Engine Model	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions
F180TAiII2SG	265	360	1.500	45,8	IMO2
	294	400		50,2	
SF180TAiII2SG	383	520		63,9	
	396	540		66,1	
	421	573		70,0	
F180TAiII2SG	309	420	1.800	56,1	IMO2
	346	470		62,0	
SF180TAiII2SG	434	590		76,0	
	441	600		77,2	

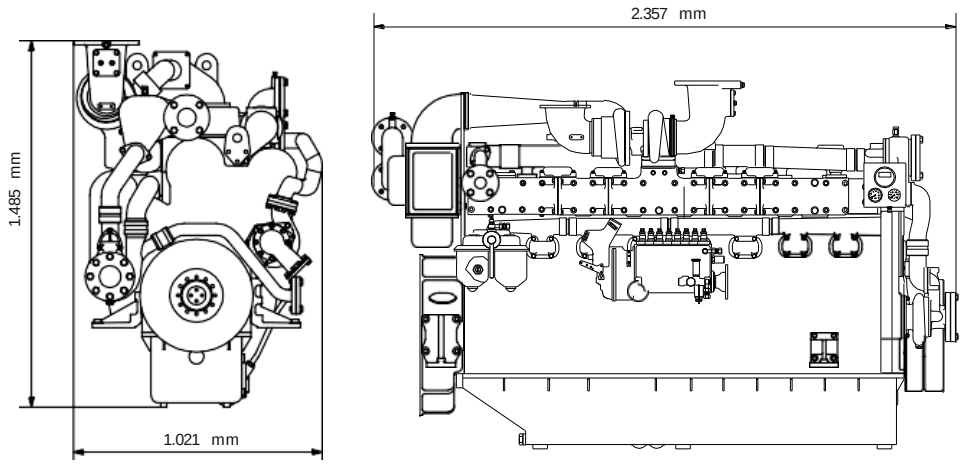
Weight

Dry weight (kg)	2.620

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

F/SF240 Series

Marine Power Generation Engines



Main data

Cycle (ISO 8178)	E2 (propulsion constant speed)
Disposition / Displacement	8 L / 23,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Turbocharged – aftercooled
Rotation (from flywheel)	Counterclockwise

Propulsion rating at constant speed

Engine Model	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions
F240TABill2SG	426	579	1.500	71,2	IMO2
SF240TAaill2SP	510	694		84,3	
	540	734		89,1	
F240TABill2SG	478	650	1.800	84,3	IMO2
SF240TAill2SG	577	785		100,31	CCNR
	588	800		102,2	IMO2

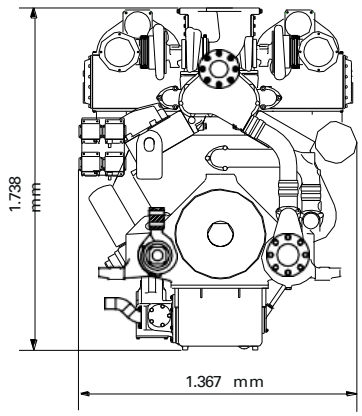
Weight

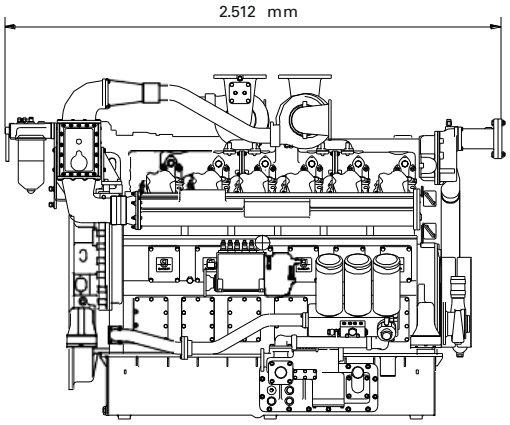
Dry weight (kg)	3.400

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

F/SF360 Series

Marine Power Generation Engines





Main data

Cycle (ISO 8178)	E2 (propulsion constant speed)
Disposition / Displacement	12 V / 35,93 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Propulsion rating at constant speed

Engine Model	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions
F360TAiII2SG	588	800	1.500	101,6	IMO2/CCNR2
SF360TAiII2SG	765	1.040		129,9	CCNR2
	800	1.088		133,6	IMO2
	840	1.142		140,6	
F360TAiII2SG	699	950	1.800	121,0	IMO2
SF360TAiII2SG	866	1.178		146,9	CCNR2
	883	1.200		149,6	IMO2

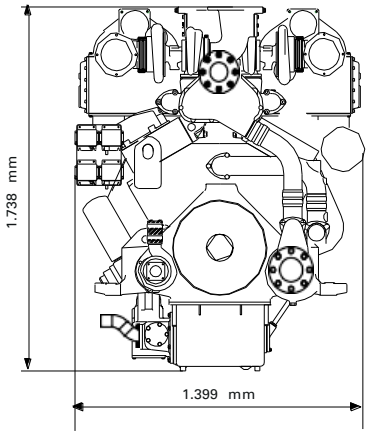
Weight

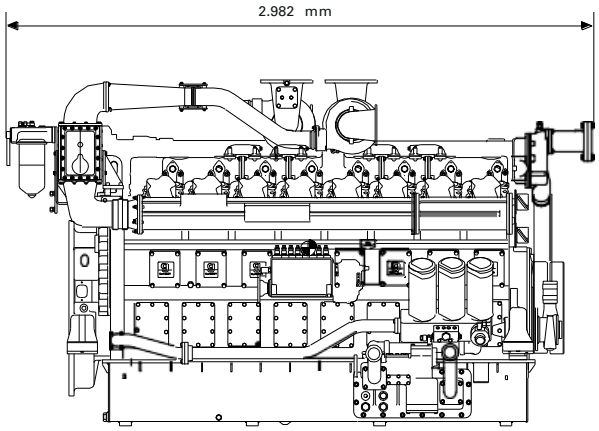
Dry weight (kg)	4.630

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

F/SF480 Series

Marine Power Generation Engines





Main data

Cycle (ISO 8178)	E2 (propulsion constant speed)
Disposition / Displacement	16 V / 47,90 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Propulsion rating at constant speed

Engine Model	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions
F480TAiII2SG	846	1.150	1.500	148,4	IMO2/CCNR2
SF480TAiII2SG	1.020	1.388		176,8	CCNR2
	1.050	1.428		174,2	IMO2
F480TAiII2SG	934	1.270	1.800	164,1	IMO2/CCNR2
SF480TAiII2SG	1.155	1.571		198,7	CCNR2
	1.177	1.600		202,2	IMO2

Weight

Dry weight (kg)	5.450

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

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