



**Guascor Energy
Auxiliary Engines
Variable Speed**

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

Auxiliary Engines

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

B - Rating (variable continuous duty)

Rated power intended for use in variable load applications, medium-high load factors; this is an ISO 3046 fuel stop power (IFN)

Typical load factors:	40-80% of rated power
Full load operation time:	80% of time or 10/12h
Operation time:	3.000 - 5.000 h/year
Hull type:	Semi-planning or semi-displacement hulls for restricted use at full load
Typical applications:	Mid-water trawlers, fishing long liners, purse seiners, harbour tow & push boats, passenger cruiser, tugboats, short distance ferries

C - Rating (intermittent duty)

Power intended for use in variable load applications with moderate load factors. This is an ISO 3046 fuel stop power (IFN)

Typical load factors:	20-80% of rated power
Full load operation time:	50% of time or 6/12h
Operation time:	1.500-3.000 h/year
Hull type:	Semi-planning or planning hulls, fast commercial and passenger vessels for restricted use with moderate load factors and high demands on vessel's speed
Typical applications:	Passenger boats, high-speed fishing boats, crew and service boats, moto-pumps, pilot boats

3. Fuel Consumption

The fuel consumption values published in this document have been calculated according to ISO8178 standard C 1 test cycles for auxiliary applications at variable 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.

C1 Test Cycle: Auxiliary engines at a variable speed

Mode Number	1	2	3	4	5	6	7	8
% Speed	100%				Intermediate			Idle
% Torque	100	75	50	10	100	75	50	0
Weight Factor	0.15	0.15	0.15	0.1	0.1	0.1	0.1	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.

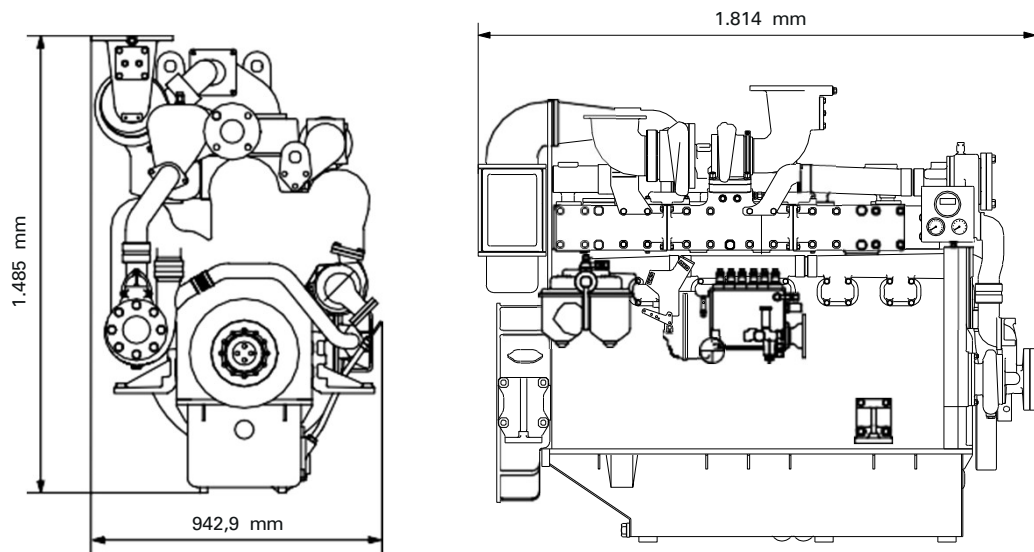
- **IMO2** IMO Tier II compliant; EIAPP certificates available since January 1, 2011
- **CCNR2** CCNR Stage II compliant
- **kWb** Mechanical kilowatt
- **mHP** Horse Power

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

Auxiliary Engines Variable Speed



Main data

Cycle (ISO 8178)	C1 (Auxiliary)
Disposition / Displacement	6 L / 17,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Nat. aspirated / turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Auxiliary ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F180SP	A	184	250	1.800	Under review	N.C.
F180TAiII2SP		331	450			
F180TABaiII2SP		368	500			
SF180TAiII2SP		412	560	1.600		
SF180TAiII2SP		434	590	1.800		
SF180TAaiII2SP		441	600			
SF180TAbiII2SP		452	615			
F180SP	B	191	260	1.800	N.C.	
F180TAaiII2SP		353	480			
F180TABbiII2SP		382	520			
SF180TAciiII2SP		474	645			
F180TABciII2SP	C	404	549	1.800	IMO2	
SF180TAdiII2SP		504	685			

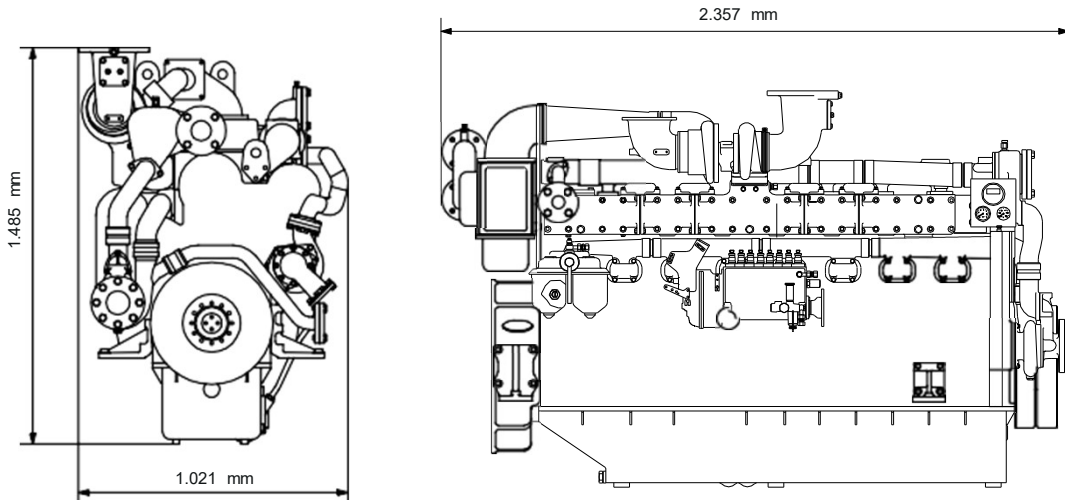
Weight

Dry weight (kg)	2.620
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Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF240 Series

Auxiliary Engines Variable Speed



Main data

Cycle (ISO 8178)	C1 (Auxiliary)
Disposition / Displacement	8 L / 23,96 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Nat. aspirated / turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Auxiliary ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F240TABiII2SP	A	478	650	1.800	Under review	IMO2
SF240TAiII2SP		552	750	1.600		CCNR2
SF240TAiII2SP		577	785	1.800		IMO2
SF240TAaiII2SP		588	800			IMO2
SF240TABiII2SP		610	830	IMO2		
F240TABaiII3SP	B	493	670	1.800		IMO2
SF240TAciII2SP		635	864	IMO2		
SF240TAdiII2SP	C	662	900	1.800	IMO2	

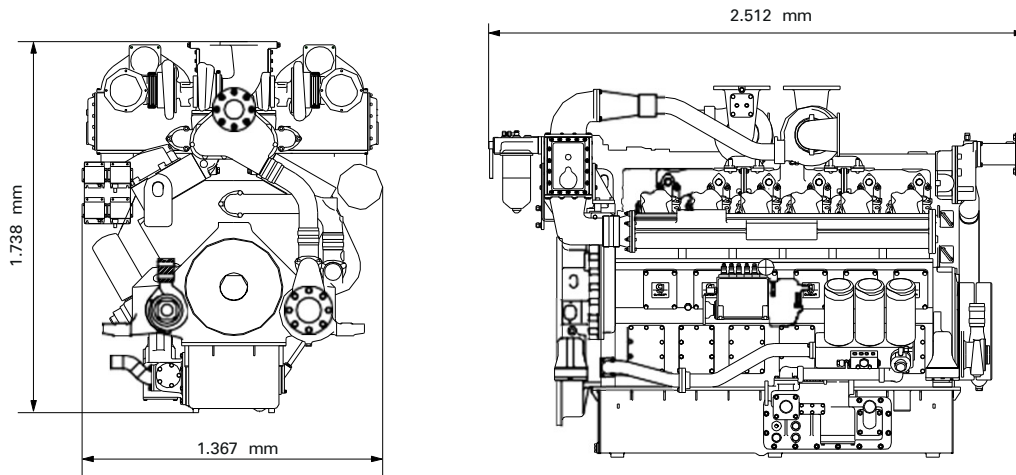
Weight

Dry weight (kg)	3.400
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Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF360 Series

Auxiliary Engines Variable Speed



Main data

Cycle (ISO 8178)	C1 (Auxiliary)
Disposition / Displacement	12 V / 35,93 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Nat. aspirated / turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Auxiliary ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F360TAiII2SP	A	662	900	1.800	Under review	IMO2
SF360TAiII2SP		824	1.120	1.600		
SF360TAiII2SP		868	1.180	1.800		CCNR2
SF360TAaiII2SP		882	1.200			IMO2
F360TAaiII2SP	B	706	960	1.800		IMO2
SF360TAbiII2SP		949	1.290			IMO2
SF360TAciII2SP	C	1.000	1.360	1.800		IMO2

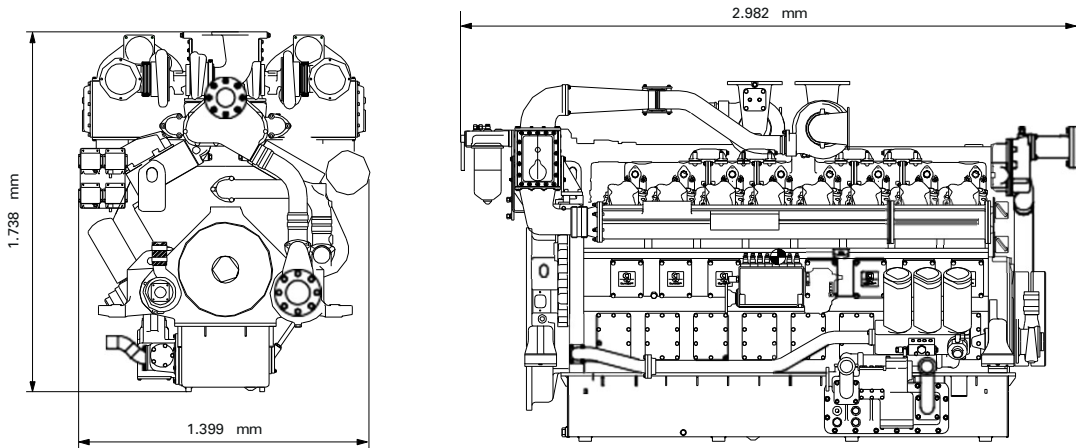
Weight

Dry weight (kg)	4.630
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Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.

F/SF480 Series

Auxiliary Engines Variable Speed



Main data

Cycle (ISO 8178)	C1 (Auxiliary)
Disposition / Displacement	16 V / 47,90 liter
Bore and stroke	152 x 165 mm
Cycle	4-stroke diesel direct injection
Aspiration	Nat. aspirated / turbocharged - aftercooled
Rotation (from flywheel)	Counterclockwise

Auxiliary ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption	Emissions		
					(ISO 8178) L/h			
F480TAaiII2SP	A	934	1.270	1.800	Under review	IMO2		
SF480TAiII2SP		1.103	1.500	1.600				
SF480TAiII2SP		1.177	1.600	1.800				
SF480TAaiII2SP		1.221	1.660	1.800				
F480TAaiII2SP	B	993	1.350	1.800		Under review	IMO2	
SF480TAbiII2SP		1.268	1.724					
F480TAbiII2SP	C	1.029	1.400	1.800			Under review	IMO2
SF480TAciII2SP		1.324	1.800					

Weight

Dry weight (kg)	4.630
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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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