

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 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 E3 test cycle for propulsion 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.

E3 Test Cycle: Main propulsion adapted to propeller demand

Mode Number	1	2	3	4
% Speed	100	91	80	63
% 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.

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

- 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.

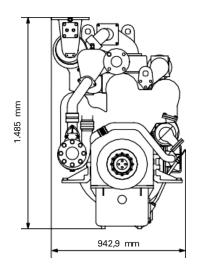
- IMO II IMO Tier II compliant; EIAPP certificates available.
- IMO III IMO Tier III compliant; EIAPP certificates available.
- CCNR2 CCNR Stage II compliant
- kWb Mechanical kilowatt
- mHP Horse Power

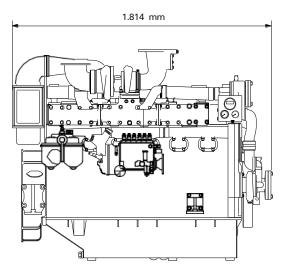
Extensions of this information should be compared with the specifications indicated in the mentioned standards.

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

F/SF180 Series

Propulsion Engines





Main data

Cycle (ISO 8178)E3 (propulsion)Disposition / Displacement6 L / 17,96 literBore and stroke $152 \times 165 mm$

Cycle 4-stroke diesel direct injection

Aspiration Nat. aspirated / turbocharged - aftercooled

Rotation (from flywheel) Counterclockwise

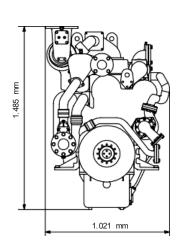
Propulsion ratings

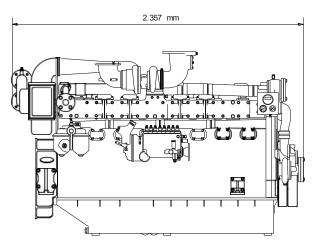
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions	
F180		184	250	1.800	N.A.	N.C.	
SF180TA		380	515	1.400	60,7		
SF180TA	Α	412	560	1.600	67,4	IMO II / IMO III	
SF180TA		434	590	1.800	75,2		
SF180TA		441	600		76,5		
F180		191	260		N.A.	N.C.	
F180TA	В	353	480	1.800	61,0		
SF180TA	Б	382	520	1.000	66,1	IMO II / IMO III	
SF180TA		474	645		82,2		
F180TA		404	550		70,4	IMO II / IMO III	
SF180TA	С	504	685	1.800	88,3	IIVIO II / IIVIO III	
		552	750		95,8	N.C.	

Dry weight (kg)	2.620
Diy woight (kg)	2.020

F/SF240 Series

Propulsion Engines





Main data

Cycle (ISO 8178)E3 (propulsion)Disposition / Displacement8 L / 23,96 literBore and stroke152 x 165 mm

Cycle4-stroke diesel direct injectionAspirationTurbocharged - aftercooledRotation (from flywheel)Counterclockwise

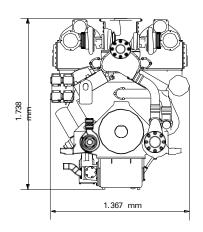
Propulsion ratings

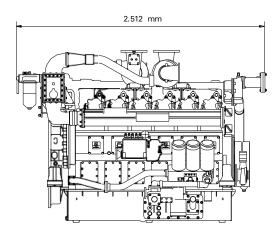
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions	
F240TA		478	650	1.800	80,1		
	А	484	660	1.400	78,6	IMO II / IMO III	
		552	750	1.600	93,3		
SF240TA		577	785	1.800	97,0	CCNR2	
		588	800		98,9	IMO II / IMO III	
F240TA	В	493 670		1.800	82,7		
SF240TA	D	635	864	1.800	106,7	IMO II / IMO III	
SF240TA	С	662	900	1.800	111,4	IMO II / IMO III	

Dry weight (kg)	3.400

F/SF360 Series

Propulsion Engines





Main data

Cycle4-stroke diesel direct injectionAspirationTurbocharged - aftercooled

Rotation (from flywheel) Counterclockwise

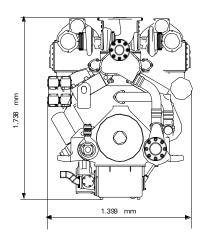
Propulsion ratings

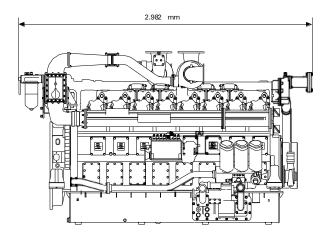
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions
		760	1.034	1.400	121,4	IMO II / IMO III
	А	824	1.120	1.600	134,3	
SF360TA		868	1.180	1.800	150,1	CCNR2
		882	1.200	1.000	149,9	IMO II / IMO III
F360TA		706	960	1.800	119,2	
SF360TA	В	810	1.100	1.400	128,6	IMO II / IMO III
5F300TA		949	1.290	1.800	161.6	
SF360TA	С	1000	1.360	1.800	170,2	IMO II / IMO III

Dry weight (kg)	4.630

F/SF480 Series

Propulsion Engines





Main data

Cycle 4-stroke diesel direct injection
Aspiration Turbocharged - aftercooled

Rotation (from flywheel) Counterclockwise

Propulsion ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178) L/h	Emissions	
		968	1.270	1.400	156,4		
SF480TA	А	1.103	1.500	1.600	185,4	IMO II / IMO III	
		1.177	1.600	1.800	195,4		
F480TA	ь	993	1.350	1.000	164,7	IMO II / IMO III	
SF480TA	В	1.268	1.724	1.800	211,2		
F480TA	С	1.029	1.400	1 000	171,3		
SF480TA	C	1.324	1.324 1.800		220,8	IMO II / IMO III	

Dry weight (kg)	5.450
Diy woight (kg)	0.700



R-160

Gearbox

Main data

FP gearbox

Hydraulic multi-disc clutches

Case-hardened grinded helical gears

Thrust bearings

Heat exchanger

Oil pressure damper tank

Mounting Brackets

Emergency mechanical clutch

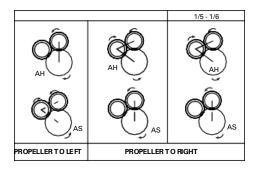
Oil filtering full Flow

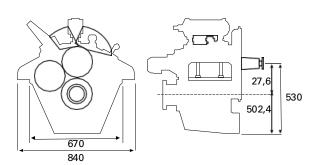
Technical data

Reduction ratio: 1,53; 2,03; 3,14; 4,06; 4,91; 5,99. Available in both rotations, except for the reductions 4,91 and 5,99, only available right rotation sense.

Bell Housg.		Rotation			RPM	Weight				
(SAE)	Rating	sense		200	1.6	600	1.8	800	max.	kg.
1,2	А	L/R	196	267	262	356	294	400	2.500	590
1,2	В	L/R	216	293	288	391	324	440	2.500	590

Rotation sense





R-240/R-240V

Single Stage Gearbox

Main data

FP gearbox

Hydraulic multi-disc clutches

Case-hardened grinded helical gears

Thrust bearings

Heat exchanger

Oil pressure damper tank

Mounting Brackets

Emergency mechanical clutch

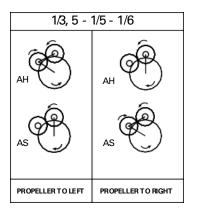
Oil filtering full Flow

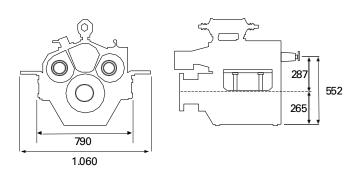
Technical data

Reduction ratio: 2,90; 3,91; 4,95

Gear	Bell Housg	Dotina	Rot.			Power	kW/h	ıP	RPM	Weight		
Stages	(SAE)	Raung	sense	1.200		1.6	600	1.800		max.	kg.	
1	1,1/2,0	Α	L/R	343	467	458	622	515	700	2.500	1.035	
1	1,1/2,0	В	L/R	378	513	503	688	566	770	2.500	1.035	

Rotation sense





R-240E/R-240EV

Double Stage Gearbox

Main data

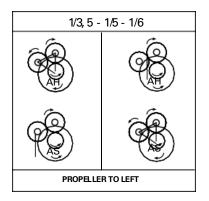
FP gearbox
Hydraulic multi-disc clutches
Case-hardened grinded helical gears
Thrust bearings
Heat exchanger
Oil pressure damper tank
Mounting Brackets
Emergency mechanical clutch
Oil filtering full Flow

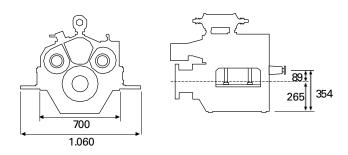
Technical data

Reduction ratio: 2,90; 3,91; 4,95

Gear	Bell Housg	Rating	Rot.			Power kW / hP				RPM	Weight
Stages	(SAE)	Kaung	sense	1.2	1.200		600	1.800		max.	kg.
2	1,1/2,0	Α	L/R	294	400	392	533	441	600	2.500	1.057
2	1,1/2,0	В	L/R	324	440	431	587	485	660	2.500	1.057

Rotation sense





R-360/R-360V

Single Stage Gearbox

Main data

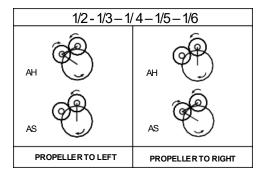
FP gearbox
Hydraulic multi-disc clutches
Case-hardened grinded helical gears
Thrust bearings
Heat exchanger
Oil pressure damper tank
Mounting Brackets
Emergency mechanical clutch
Oil filtering full Flow

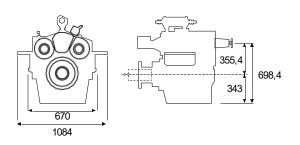
Technical data

Reduction ratio: 2,04; 3,25; 4,38; 5,1; 6,0.

Pair of	Bell Housg. (SAE)	Rating	Rot. sense			RPM	Weight				
gears				1.200		1.600		1.800		max.	kg.
1	1,1/2,0	Α	L/R	441	600	588	800	662	900	2.000	1.270
1	1,1/2,0	В	L/R	485	660	647	880	728	990	2.000	1.270

Rotation sense





R-360E/R-360EV

Double Stage Gearbox

Main data

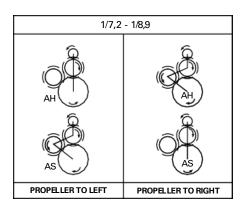
FP gearbox
Hydraulic multi-disc clutches
Case-hardened grinded helical gears
Thrust bearings
Heat exchanger
Oil pressure damper tank
Mounting Brackets
Emergency mechanical clutch
Oil filtering full Flow

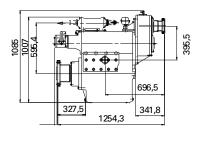
Technical data

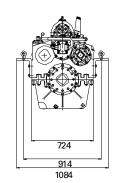
Reduction ratio: 7,20; 8,90 (Valid for fixed and variable pitch propeller)

	Bell		Rot. sense			RPM					
Pair of gears	Housg. (SAE)	Rating		1.2	200	1.6	600	1.80	00	max.	Weight kg.
2	1,1/2,0	Α	L/R	343	467	458	622	515	700	2.000	1.350
2	1,1/2,0	А	L/R	294	400	392	533	441	600	2.500	1.350
2	1,1/2,0	В	L/R	378	513	503	684	566	770	2.000	1.350
2	1,1/2,0	В	L/R	324	440	431	587	485	660	2.500	1.350

Rotation sense







R-500

Gearbox

Main data

FP gearbox
Hydraulic multi-disc clutches
Case-hardened grinded helical gears
Thrust bearings
Heat exchanger
Oil pressure damper tank
Mounting Brackets
Emergency mechanical clutch
Oil filtering full Flow

Technical data

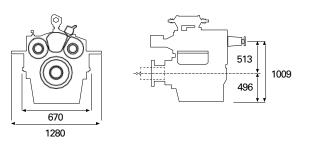
Reduction ratio: 2,69; 3,25; 3,97; 4,86; 6,08; 7,03 (Valid for fixed and variable pitch propeller)

Bell			Power kW / hP				RPM				
Housg. (SAE)	Rating	Rot. sense	1.2	200	1.6	600	1.8	300	max.	Weight kg.	
N.A	Α	L/R	819	1.113	1.092	1.483	1.228	1.670	1.900	2.700	
N.A	В	L/R	901	1.225	1.201	1.632	1.351	1.837	1.900	2.700	

Note: For reduction 7,03 the only rotation sense availble is right.

Rotation sense

1/2 - 1/3 - 1/4 - 1/5 - 1/6 AH AH AS PROPELLER TO LEFT PROPELLER TO RIGHT



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