



**Guascor Energy
Propulsion Engines
and Gearboxes**

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 E 3 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	5
% 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.

- 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

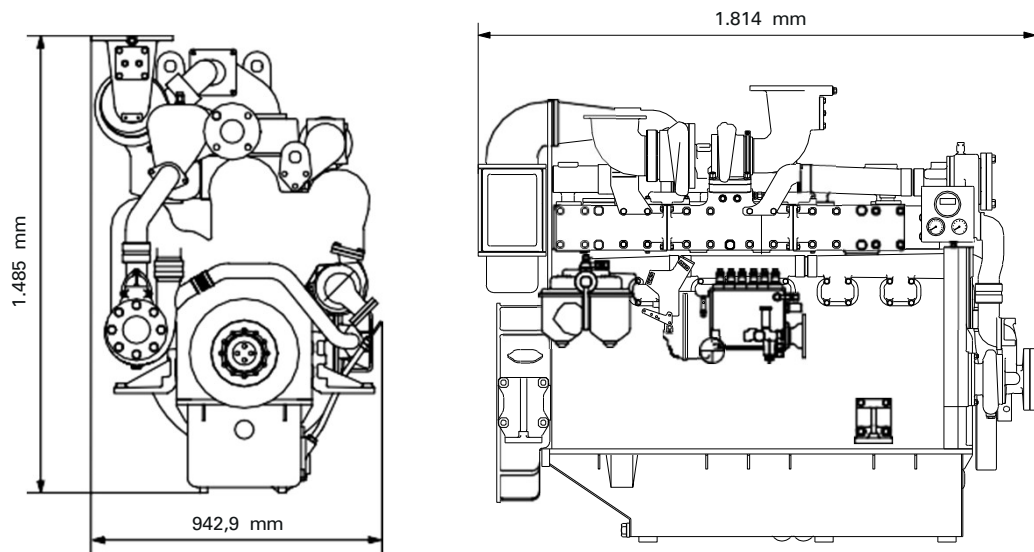
This document contents the following abbreviations which will appear on subsequent pages to identify the emission regulation compliance of each engine type and/or rating.

- **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 Propulsion Engines



Main data

Cycle (ISO 8178)	E3 (propulsion)
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

Propulsion ratings

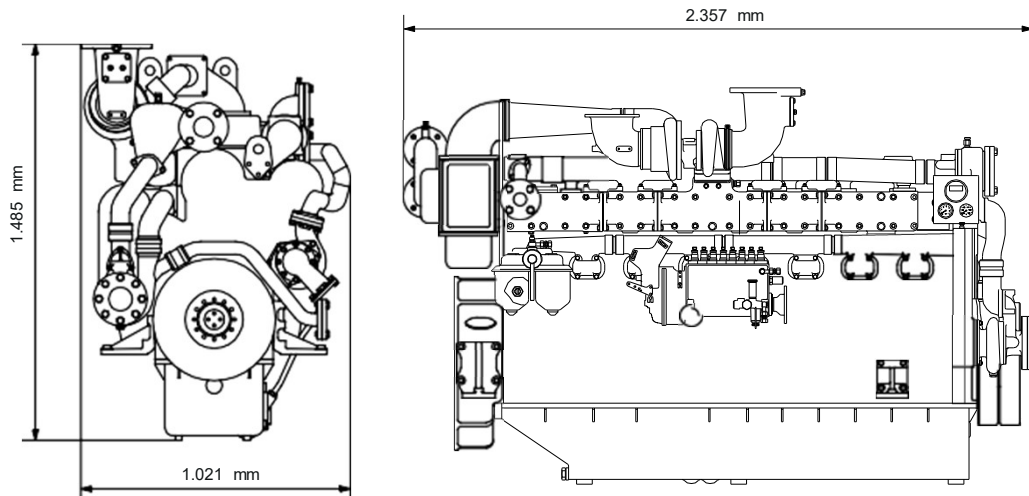
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F180SP	A	184	250	1.800	N.A.	N.C.
F180TAiII2SP		331	450		58,3	
F180TABaiII2SP		368	500		62,1	
SF180TAiII2SP		412	560	1.600	69,4	IMO2
SF180TAiII2SP		434	590	1.800	74,3	
SF180TAaiII2SP		441	600		77,4	
F180SP	B	191	260	1.800	N.A.	N.C.
F180TAaiII2SP		353	480		62,1	
F180TABbiII2SP		382	520		65,1	IMO2
SF180TAciII2SP		474	645		83,5	
F180TABciII2SP	C	404	549	1.800	69,1	IMO2
SF180TAdiII2SP		504	685		89,5	

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 Propulsion Engines



Main data

Cycle (ISO 8178)	E3 (propulsion)
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 ratings

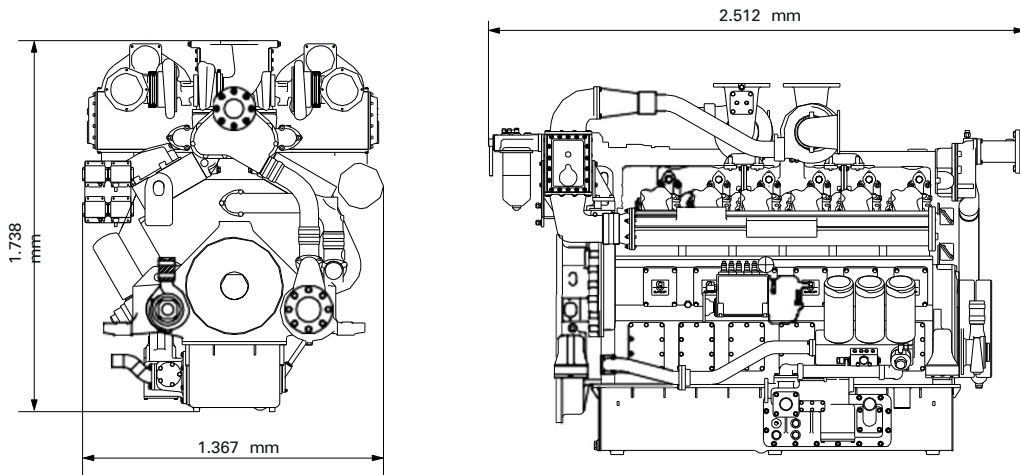
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F240TABiII2SP	A	478	650	1.800	80,7	IMO2
SF240TAiII2SP		552	750	1.600	93,0	
SF240TAiII2SP		577	785	1.800	97,0	CCNR2
SF240TAaiII2SP		588	800		99,1	IMO2
F240TABaiIISP	B	493	670	1.800	83,1	IMO2
SF240TAciiI2SP		635	864		107,2	
SF240TAdiII2SP	C	662	900	1.800	112,1	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 Propulsion Engines



Main data

Cycle (ISO 8178)	E3 (propulsion)
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 ratings

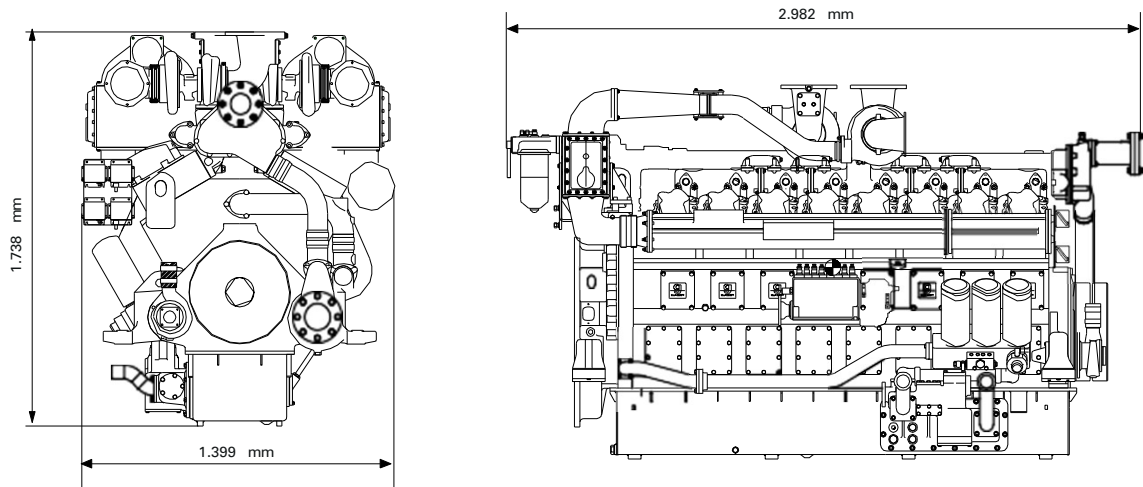
Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F360TAiII2SP	A	662	900	1.800	114,7	IMO2
SF360TAiII2SP		824	1.120	1.600	139,0	
SF360TAiII2SP		868	1.180	1.800	150,1	CCNR2
SF360TAaiII2SP		882	1.200		152,6	IMO2
F360TAaiII2SP	B	706	960	1.800	122,0	IMO2
SF360TAbiII2SP		949	1.290		165,1	
SF360TAciII2SP	C	1.000	1.360	1.800	174,6	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 Propulsion Engines



Main data

Cycle (ISO 8178)	E3 (propulsion)
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 ratings

Engine Model	Rating	kWb	mHP	RPM	Fuel consumption (ISO 8178)	Emissions
					L/h	
F480TAaill2SP	A	934	1.270	1.800	114,7	IMO2
SF480TAiIl2SP		1.103	1.500	1.600	139	
SF480TAiIl2SP		1.177	1.600	1.800	150,1	
F480TAaill2SP	B	993	1.350	1.800	122	IMO2
SF480TAbIl2SP		1.268	1.724		165,1	
F480TAbiIl2SP	C	1.029	1.400	1.800	174,6	IMO2
SF480TAcIl2SP		1.324	1.800		211,9	

Weight

Dry weight (kg)	5.450
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Dimensions and weight may vary depending upon engine configuration.
Data subject to further modifications without prior notice.



Guascor Energy Gearboxes

R-160

Gearbox

Main data

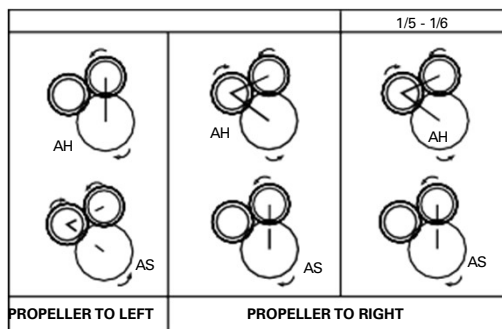
FP gearbox
 Hydraulic multi-disc clutches
 Case-hardened grinded helical gears
 Thrust bearings
 Heat exchanger
 Oil pressure damper tank
 Mounting Brackets
 Emergency mechanical clutch
 Oil filtering full Flow

Technical data

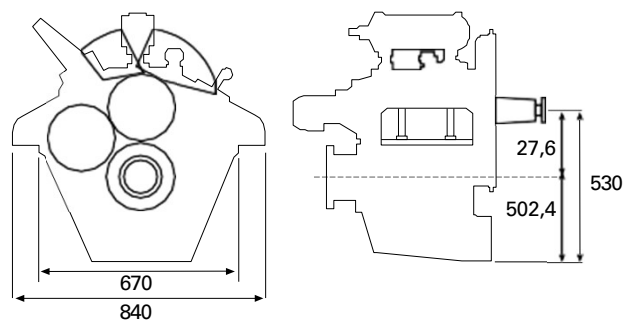
Reduction ratio: 1,53; 2,03; 3,14; 4,06; 4,91; 5,99. Available in both rotations, except for the reductions 4,91 and 5,99, only available right rotation sense.

Bell Housg. (SAE)	Rating	Rotation sense	Power kW / hP						RPM max.	Weight kg.
			1.200		1.600		1.800			
1,2	A	L / R	196	267	262	356	294	400	2.500	590
1,2	B	L / R	216	293	288	391	324	440	2.500	590

Rotation sense



Dimensions



R-240/R-240V

Single Stage Gearbox

Main data

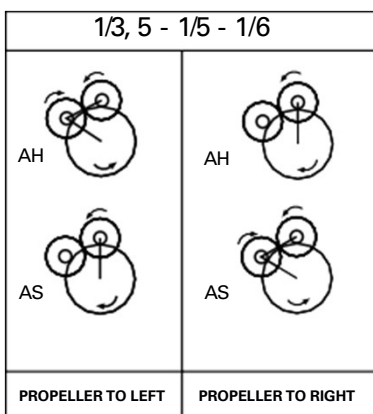
FP gearbox
 Hydraulic multi-disc clutches
 Case-hardened grinded helical gears
 Thrust bearings
 Heat exchanger
 Oil pressure damper tank
 Mounting Brackets
 Emergency mechanical clutch
 Oil filtering full Flow

Technical data

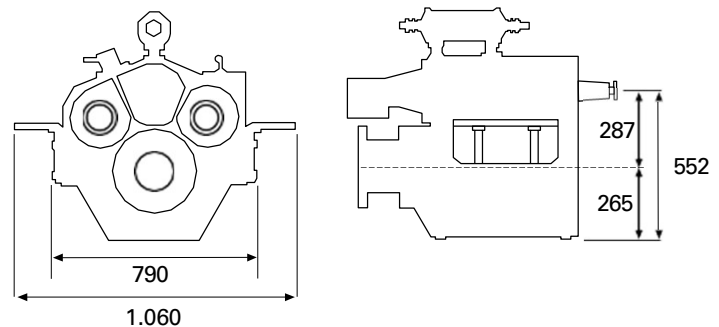
Reduction ratio: 2,90; 3,91; 4,95

Gear Stages	Bell Housg (SAE)	Rating	Rot. sense	Power kW / hP						RPM max.	Weight kg.
				1.200		1.600		1.800			
1	1,1/2,0	A	L / R	343	467	458	622	515	700	2.500	1.035
1	1,1/2,0	B	L / R	378	513	503	688	566	770	2.500	1.035

Rotation sense



Dimensions



R-240E/R-240EV

Double Stage Gearbox

Main data

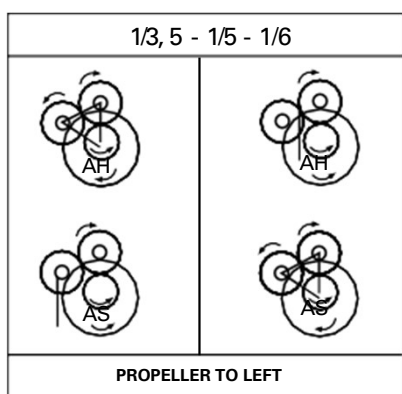
FP gearbox
 Hydraulic multi-disc clutches
 Case-hardened grinded helical gears
 Thrust bearings
 Heat exchanger
 Oil pressure damper tank
 Mounting Brackets
 Emergency mechanical clutch
 Oil filtering full Flow

Technical data

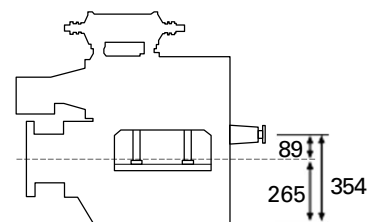
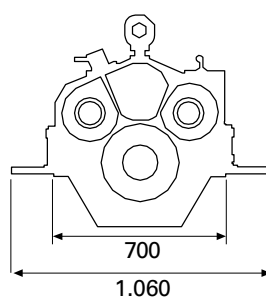
Reduction ratio: 2,90; 3,91; 4,95

Gear Stages	Bell Housg (SAE)	Rating	Rot. sense	Power kW / hP						RPM max.	Weight kg.
				1.200		1.600		1.800			
2	1,1/2,0	A	L / R	294	400	392	533	441	600	2.500	1.057
2	1,1/2,0	B	L / R	324	440	431	587	485	660	2.500	1.057

Rotation sense



Dimensions



R-360/R-360V

Single Stage Gearbox

Main data

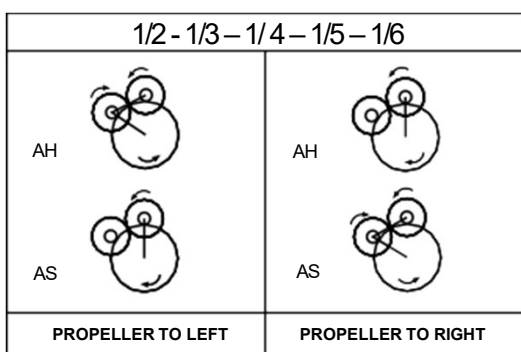
FP gearbox
 Hydraulic multi-disc clutches
 Case-hardened grinded helical gears
 Thrust bearings
 Heat exchanger
 Oil pressure damper tank
 Mounting Brackets
 Emergency mechanical clutch
 Oil filtering full Flow

Technical data

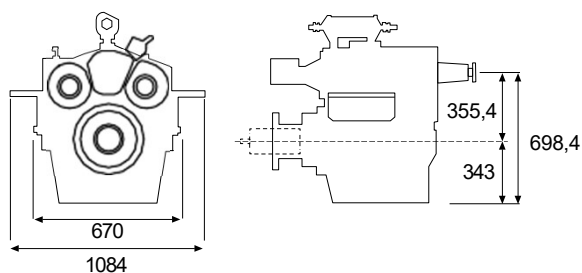
Reduction ratio: 2,04; 3,25; 4,38; 5,1; 6,0.

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

Rotation sense



Dimensions



R-360E/R-360EV

Double Stage Gearbox

Main data

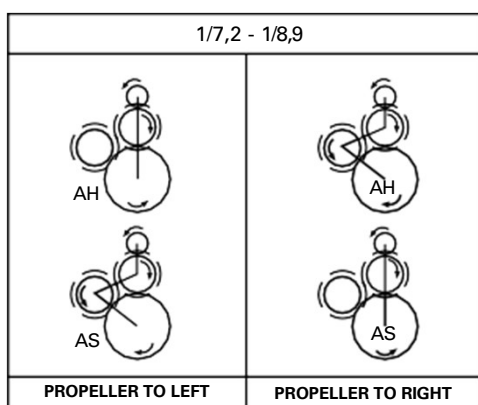
FP gearbox
 Hydraulic multi-disc clutches
 Case-hardened grinded helical gears
 Thrust bearings
 Heat exchanger
 Oil pressure damper tank
 Mounting Brackets
 Emergency mechanical clutch
 Oil filtering full Flow

Technical data

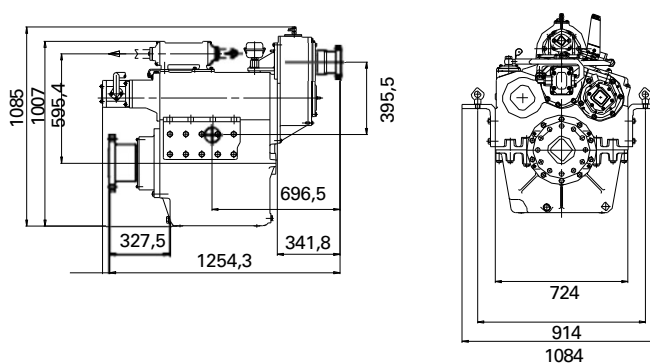
Reduction ratio: 7,20; 8,90 (Valid for fixed and variable pitch propeller)

Pair of gears	Bell Housg. (SAE)	Rating	Rot. sense	Power kW / hP						RPM max.	Weight kg.
				1.200		1.600		1.800			
2	1,1/2,0	A	L / R	343	467	458	622	515	700	2.000	1.350
2	1,1/2,0	A	L / R	294	400	392	533	441	600	2.500	1.350
2	1,1/2,0	B	L / R	378	513	503	684	566	770	2.000	1.350
2	1,1/2,0	B	L / R	324	440	431	587	485	660	2.500	1.350

Rotation sense



Dimensions



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

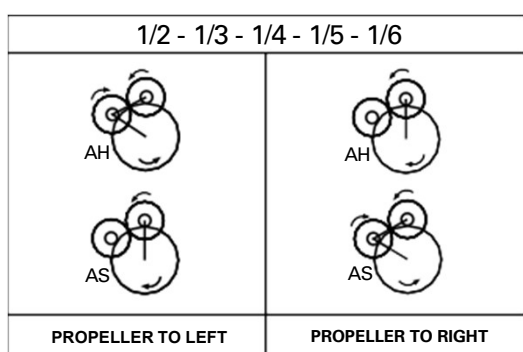
Technical data

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

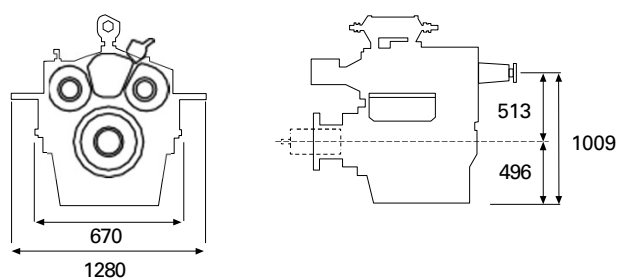
Bell Housg. (SAE)	Rating	Rot. sense	Power kW / hP						RPM max.	Weight kg.
			1.200		1.600		1.800			
N.A	A	L / R	819	1.113	1.092	1.483	1.228	1.670	1.900	2.700
N.A	B	L / R	901	1.225	1.201	1.632	1.351	1.837	1.900	2.700

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

Rotation sense



Dimensions



**Published by
Guascor Energy**

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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