



HiMSEN Engine Programme
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HiMSEN Engine

Hi-Touch and Hi-Tech Medium Speed Engine
IMO Tier II Programme 2009



www.hhi.co.kr
www.hyundai-engine.com
www.himsen-engine.com

2009

Marine & Offshore GenSets
Marine Propulsion System
Stationary GenSets

October, 2009
Contents subject to change without prior notice.



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HYUNDAI 

HIMSEN

Hi-Touch Medium Speed Engine

Key to Components

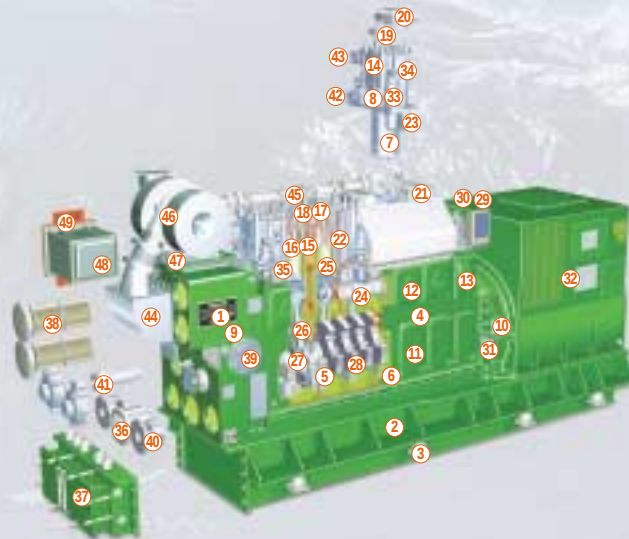
HYUNDAI-HIMSEN

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HIMSEN Engine

Hi-Touch Medium Speed Engine



Introduction

HYUNDAI-HiMSEN

General

This programme provides necessary information and recommendations for the application of HYUNDAI's HiMSEN engines.

'HiMSEN'® is the registered brand name of HYUNDAI's own design engine and the abbreviation of '**Hi-Touch and Hi-Tech Medium Speed Engine**'.

Please note that all data and information prepared in this programme are for guidance only and subject to revision without notice. Therefore, please contact Hyundai Heavy Industries Co., Ltd. before actual applications of the data. Hyundai Heavy Industries Co., Ltd. will always provide the data for the installation of specific project.

Engine Model Designation

6 H 21 / 32 (M), (P), (S)

No. of Cylinders (5, 6, 7, 8, 9)

HYUNDAI's HiMSEN

Cylinder Bore in cm

Piston Stroke in cm

Marine GenSets

Marine Propulsion System

Stationary GenSets

Engine Operation

Reference Condition

General definition of diesel engine rating is specified in accordance with ISO 3046/1.

However the engine outputs are available within tropical conditions without de-rating.

Tropical Conditions

- Turbocharger air inlet pressure : 1,000 mbar
 - Turbocharger air inlet temperature : 318 °K (45 °C)
 - Charge air coolant temperature : 309 °K (36 °C)*
- * Valid for central cooling system up to 36 °C normally, 38 °C specially.

Specific Fuel Oil Consumption (SFOC) & Heat Rate

The stated consumption figures refer to the following ISO reference conditions :

- Turbocharger air inlet pressure : 1,000 mbar
- Turbocharger air inlet temperature : 298 °K (25 °C)
- Charge air coolant temperature : 298 °K (25 °C)

The SFOC figures for engines in diesel operation are based on a lower calorific value of the fuel of 42,700 kJ/kg.

Engine Operation

HYUNDAI-HIMSEN

Engine Power

The engine brake power is stated in kW. For conversion between kW and metric horsepower, please note that $1 \text{ bhp} = 75 \text{ kg} \cdot \text{m/s} = 0.7355 \text{ kW}$.

Ratings are given according to ISO 3046-1:2002.

Continuous Load-Up

The quickest way to load-up from 0 % to 100 % load can be achieved by increasing the load continuously and gradually.

Step by Step Load-Up

Considering the time required for stabilizing the frequency deviation due to sudden load-up, it is recommended to load up from idle to full load by more than three steps under approval of classification society.

HiMSEN GenSets fulfill the requirements of classification societies concerning the frequency deviation and recovery time when loading up by 3 steps from 0 % to 100 %.

It is recommended to have 3 steps according to IACS (especially for GenSets of 720rpm or 900rpm due to higher BMEP of over 24 bar).



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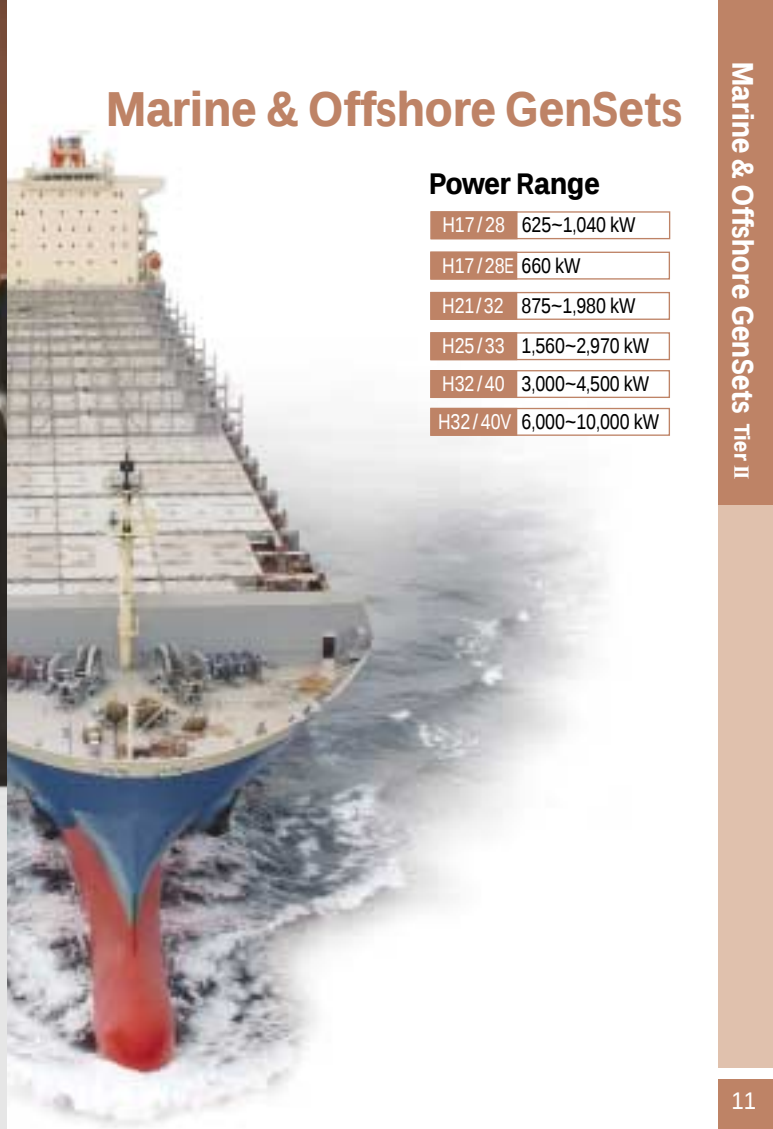
Hi-Touch Medium Speed Engine



Marine & Offshore GenSets

Power Range

H17/28	625~1,040 kW
H17/28E	660 kW
H21/32	875~1,980 kW
H25/33	1,560~2,970 kW
H32/40	3,000~4,500 kW
H32/40V	6,000~10,000 kW



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HIIMSEN

Hi-Touch Medium Speed Engine



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HiMSEN

Hi-Touch Medium Speed Engine

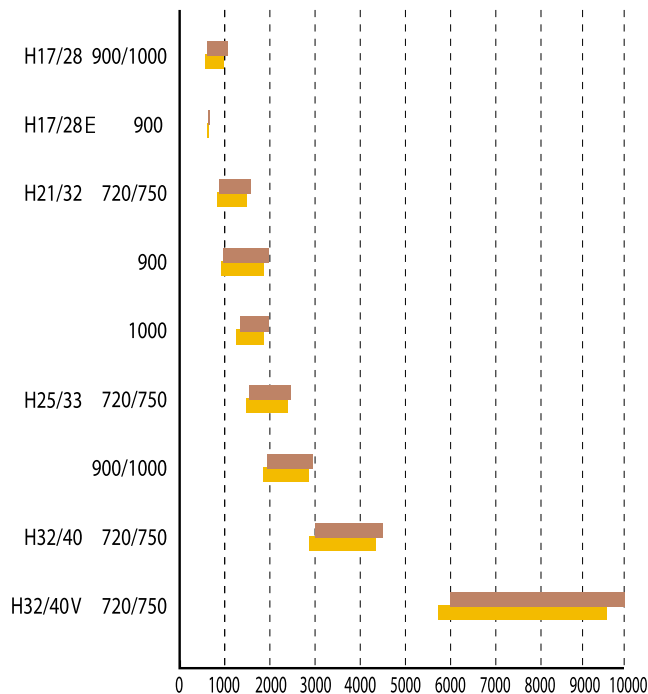
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General Information

Engine (kW) 
Generator (kW) 

Marine GenSets

Model rpm



Marine GenSets

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Bore : 170 mm, Stroke : 280 mm

Main Data

Speed	900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
5H17/28	625	584	650	608
6H17/28	750	701	780	729
7H17/28	875	823	910	855
8H17/28	1,000	940	1,040	978

Remarks

- 1) No overload is permissible except for 10% overload during official factory test.
- 2) The alternator outputs are calculated for an efficiency of 93.5~94 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	900 rpm	1000 rpm
100%	195 g/kWh	195 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

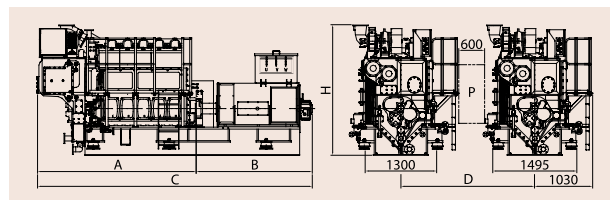
Marine GenSets

Bore : 170 mm, Stroke : 280 mm

Dimensions

900 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ²⁾	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	2,791	2,200	4,991	2,314	7.7	13.6
	6	3,071	2,200	5,271	2,314	8.5	14.5
	7	3,351	2,200	5,551	2,314	9.4	15.6
	8	3,631	2,320	5,951	2,314	10.4	16.7

1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ²⁾	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	2,791	2,200	4,991	2,314	7.7	13.6
	6	3,071	2,200	5,271	2,314	8.5	14.5
	7	3,351	2,200	5,551	2,314	9.4	15.6
	8	3,631	2,320	5,951	2,314	10.4	16.7



Remarks

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 2,552 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Marine GenSets

HYUNDAI-HIMSEN

Bore : 170 mm, Stroke : 280 mm

Main Data

Speed	900 rpm	
Frequency	60 Hz	
	Eng. kW	Gen. kW
6H17/28E	660	617

Remarks

- 1) The permissible overload is 10 % for one hour every twelve hours.
- 2) The alternator outputs are calculated for an efficiency of 93.5 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating and upto +2 % uprating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	900 rpm
100%	193 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

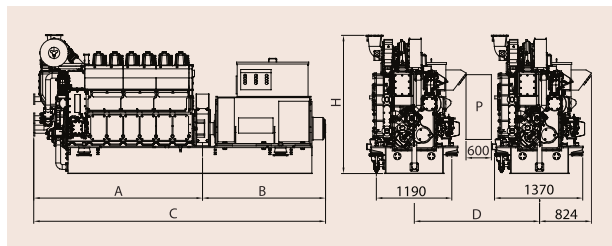
HYUNDAI-HIMSEN

Marine GenSets

Bore : 170 mm, Stroke : 280 mm

Dimensions

900 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	6	2,674	1,939	4,613	2,192	7.8	12.1

**Remarks**

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 2,552 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

This type of engine is optimized as planning products.

1. Optimized capacity for front module (pump, cooler, filter, valve, etc) .
2. Only 6cyl. for pump cover.
3. Optimized design for crankshaft, engine module.
4. Reducing of weight, simplification, etc.

Marine GenSets

HYUNDAI-HIMSEN

Bore : 210 mm, Stroke : 320 mm

Main Data

Speed	720 rpm		750 rpm		900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz		60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW
5H21/32	875	823	875	823	960	910	-	-
6H21/32	1,050	987	1,050	987	1,320	1,254	1,320	1,254
7H21/32	1,225	1,164	1,225	1,164	1,540	1,463	1,540	1,463
8H21/32	1,400	1,330	1,400	1,330	1,760	1,672	1,760	1,672
9H21/32	1,575	1,496	1,575	1,496	1,980	1,881	1,980	1,881

Remarks

- 1) No overload is permissible except for 10% overload during official factory test.
- 2) The alternator outputs are calculated for an efficiency of 94~95 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm	900 rpm	1000 rpm
100%	188 g/kWh	188 g/kWh	189 g/kWh	191 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

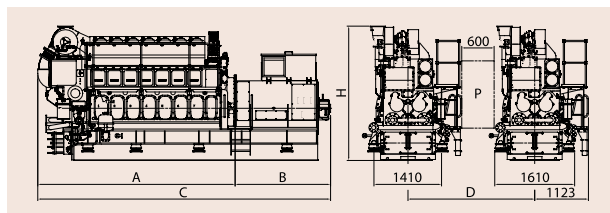
Marine GenSets

Bore : 210 mm, Stroke : 320 mm

Dimensions

720 / 750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₁₎	C ₁₎	H	Engine ₃₎	GenSet _{1),4)}
	5	3,405	1,926	5,331	2,712	14.0	22.4
	6	3,781	2,093	5,874	2,712	15.6	23.5
	7	4,111	1,923	6,034	2,781	17.1	26.5
	8	4,453	2,175	6,628	2,781	18.5	29.1
	9	4,783	2,265	7,048	2,911	19.9	31.7

900 / 1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₁₎	C ₁₎	H	Engine ₃₎	GenSet _{1),4)}
	5	3,411	2,097	5,508	2,712	13.4	22.9
	6	3,781	1,896	5,677	2,781	15.1	26.1
	7	4,235	1,900	6,135	2,781	16.7	28.6
	8	4,453	2,175	6,628	2,911	18.4	29.1
	9	4,783	2,265	7,048	2,911	19.8	31.7

**Remarks**

- 1) Depending on alternator.
- 2) Weight included a standard alternator (Maker : HHI-EES).
- 3) Without common base frame.
- 4) With common base frame & alternator.

D : Min distance between engines 2,613 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Marine GenSets

HYUNDAI-HIMSEN

Bore : 250 mm, Stroke : 330 mm

Main Data

Speed	720 rpm		750 rpm		900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz		60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW
6H25/33	1,560	1,482	1,650	1,568	1,890	1,796	1,980	1,881
7H25/33	1,820	1,729	1,925	1,829	2,205	2,095	2,310	2,195
8H25/33	2,080	1,976	2,200	2,090	2,520	2,394	2,640	2,508
9H25/33	2,340	2,223	2,475	2,351	2,835	2,693	2,970	2,822

Remarks

- 1) No overload is permissible except for 10% overload during official factory test.
- 2) The alternator outputs are calculated for an efficiency of 95 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm	900 rpm	1000 rpm
100%	186 g/kWh	186 g/kWh	187 g/kWh	187 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

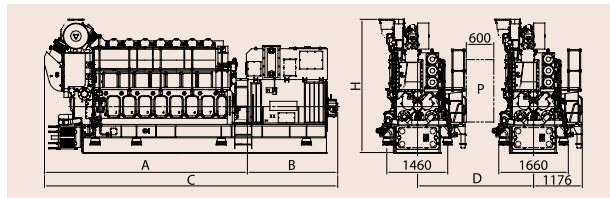
Marine GenSets

Bore : 250 mm, Stroke : 330 mm

Dimensions

720 / 750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	6	4,414	2,262	6,676	2,961	20.2	29.8
	7	4,794	2,262	7,056	2,961	22.5	33.9
	8	5,311	2,340	7,651	3,241	24.1	39.5
	9	5,691	2,262	7,953	3,371	26.2	45.0

900 / 1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	6	4,414	2,262	6,676	2,961	20.2	29.8
	7	4,794	2,262	7,056	3,241	22.5	33.9
	8	5,311	2,340	7,651	3,371	24.1	39.5
	9	5,691	2,490	8,181	3,371	26.2	45.0

**Remarks**

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 2,844mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Marine GenSets

HYUNDAI-HIMSEN

Bore : 320 mm, Stroke : 400 mm

Main Data

Speed	720 rpm		750 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
6H32/40	3,000	2,880	3,000	2,880
7H32/40	3,500	3,360	3,500	3,360
8H32/40	4,000	3,840	4,000	3,840
9H32/40	4,500	4,320	4,500	4,320

Remarks

- 1) The permissible overload is 10 % for one hour every twelve hours.
- 2) The alternator outputs are calculated for an efficiency of 96 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating and upto +2 % uprating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm
100%	183 g/kWh	185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.7 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

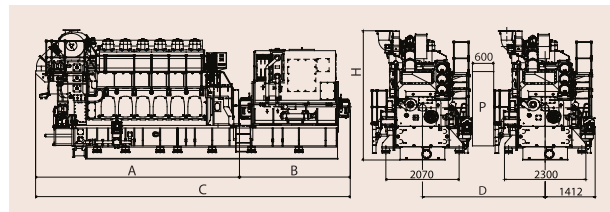
Marine GenSets

Bore : 320 mm, Stroke : 400 mm

Dimensions

720 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
6	5,760	3,130	8,890	3,959	33.7	68.6	
7	6,112	3,374	9,486	4,130	38.6	77.1	
8	6,602	3,594	10,196	4,130	41.5	82.0	
9	7,092	4,097	11,189	4,130	44.6	89.1	

750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
6	5,760	3,130	8,890	3,959	33.7	68.6	
7	6,112	3,374	9,486	4,130	38.6	77.1	
8	6,602	3,594	10,196	4,130	41.5	82.0	
9	7,092	4,097	11,189	4,130	44.6	89.1	

**Remarks**

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 3,408 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Marine & Offshore GenSets

HYUNDAI-HIMSEN

Bore : 320 mm, Stroke : 400 mm

Main Data

Speed	720 rpm		750 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
12H32/40V	6,000	5,760	6,000	5,760
14H32/40V	7,000	6,720	7,000	6,720
16H32/40V	8,000	7,680	8,000	7,680
18H32/40V	9,000	8,640	9,000	8,640
20H32/40V	10,000	9,600	10,000	9,600

Remarks

- 1) The permissible overload is 10 % for one hour every twelve hours.
- 2) The alternator outputs are calculated for an efficiency of 96 % and a power factor of 0.8 lagging.
- 3) Power adjusting upto -5 % derating and upto +2 % uprating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm
100%	183 g/kWh	185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.8 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

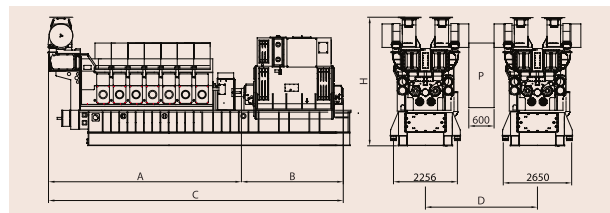
Marine & Offshore GenSets

Bore : 320 mm, Stroke : 400 mm

Dimensions

720 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	12	6,624	3,760	10,384	4,723	56.0	108.8
	14	7,295	3,860	11,155	4,723	63.3	121.3
	16	7,914	3,479	11,393	4,723	69.1	130.9
	18	8,585	3,859	12,444	4,794	76.3	141.2
	20	9,344	3,659	13,003	4,794	84.0	153.9

750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	12	6,624	3,760	10,384	4,723	56.0	108.8
	14	7,295	3,860	11,155	4,723	63.3	121.3
	16	7,914	3,479	11,393	4,723	69.1	130.9
	18	8,585	3,859	12,444	4,794	76.3	141.2
	20	9,344	3,659	13,003	4,794	84.0	153.9

**Remarks**

- 1) Depending on alternator.
- 2) Weight included a standard alternator (Maker : HHI-EES).
- 3) Without common base frame.
- 4) With common base frame & alternator.

D : Min distance between engines 4,405 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Marine Propulsion System

Power Range

H21/32P	1,200~1,800 kW
H25/33P	1,740~2,610 kW
H32/40P	2,880~4,320 kW / FPP 3,000~4,500 kW / CPP

HiMSEN...

The best solution for all type of marine vessels and offshore applications with proven reliability, low emission, low operation cost, multi-fuel capability...

Our extensive R & D facilities enable HHI to provide the customers with high quality and excellent services in all phases of designing, production, assembly and commissioning of HiMSEN propulsion packaged system.



General Information

HYUNDAI-HiMSEN

Long Term Commitment...

To provide the market with reliable, cost effective and earth-friendly solution

Optimized Matching of HiMSEN Propulsion Package

- HiMSEN H21/32P, H25/33P and H32/40P engine
- C.P. /F.P. propeller with shafting
- Pitch and speed control
- Load control
- Reduction gear
- Shaft generator
- Auxiliary machinery

Application

- Controllable pitch propulsion
- Fixed pitch propulsion
- Azimuth thruster propulsion
- Pump drive

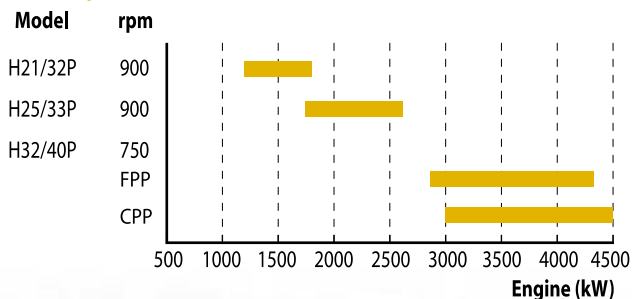
Excellent Performance of HiMSEN Propulsion Engine

- Improved transient operation with pulse charging turbocharger
- Invisible smoke with pulse charging turbocharger by part load matching
- Lower thermal load engine with lower exhaust gas temperature
- Low fuel consumption
- Low NOx emission

HYUNDAI-HiMSEN

General Information

Marine Propulsion



Marine Propulsion System

Bore : 210 mm, Stroke : 320 mm

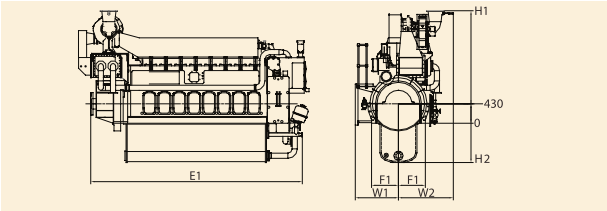
HYUNDAI-HIMSEN

Controllable Pitch Propeller

Permit high skew angles to minimize noise and vibration.

Fixed Pitch Propeller

Guarantee optimum thrust, minimal noise and vibration level.



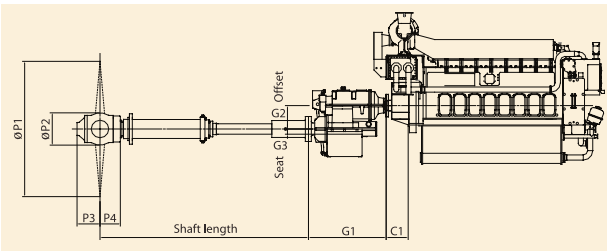
Dimensions

900 rpm	Cyl.	Rated Output at Engine(KW)	Engine dimension(mm) & dry weight(ton)						
			E1	H1	H2	F1	W1	W2	Dry Weight
	6	1,200	3,904	2,287	1,120	595	955	1,126	18.0
	8	1,600	4,634	2,541	1,300	595	955	1,214	21.0
	9	1,800	4,994	2,541	1,300	595	955	1,214	23.0

Specific Fuel Oil Consumption at 100 % Engine Load : 187 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only



HYUNDAI-HIMSEN

Marine Propulsion System

Bore : 210 mm, Stroke : 320 mm

Engine Type	CPP Package System	Gear ratio	Propeller speed	Propeller Diameter (without nozzle) P1(mm)		
	Type	(i:1)	(rpm)	Optim.	Min	Max
6H21/32P 900 rpm 1200 kW	ACG 52/450	3.22	279.5	2,300	2,200	2,400
	ACG 52/450	3.38	258.6	2,400	2,300	2,500
	ACG 56/450	3.76	239.4	2,500	2,400	2,600
	ACG 56/450	4.03	223.3	2,550	2,450	2,650
8H21/32P 900 rpm 1600 kW	ACG 56/450	4.17	215.8	2,600	2,500	2,700
	ACG 56/450	3.22	279.5	2,450	2,350	2,550
	ACG 56/450	3.48	258.6	2,550	2,450	2,650
	ACG 62/450	3.76	239.4	2,650	2,550	2,750
9H21/32P 900 rpm 1800 kW	ACG 62/525	3.95	227.8	2,750	2,650	2,850
	ACG 62/525	4.22	213.3	2,800	2,700	2,900
	ACG 62/525	3.16	284.8	2,450	2,350	2,550
	ACG 62/525	3.40	264.7	2,600	2,500	2,700
	ACG 62/525	3.66	245.9	2,700	2,600	2,800
	ACG 62/525	3.95	277.85	2,800	2,700	2,900
	ACG 62/525	4.22	213.27	2,900	2,800	3,000

Engine Type	Hub Dimension (mm)			Gear box & coupling dimension(mm) & dry weight(kg)				
	P2	P3	P4	G1	G2	G3	C1	Dry Weight
6H21/32P 900 rpm 1200 kW	520	367	327	1,493	450	100	396	3,284
	520	367	327	1,493	450	100	396	3,284
	560	410	228	1,493	450	100	396	3,284
	560	410	228	1,493	450	100	396	3,284
8H21/32P 900 rpm 1600 kW	560	410	228	1,493	450	100	396	3,284
	560	410	228	1,493	450	100	420	3,321
	620	441	254	1,493	450	100	420	3,321
	620	441	254	1,727	525	105	420	4,521
9H21/32P 900 rpm 1800 kW	620	441	254	1,727	525	105	420	4,521
	620	441	254	1,727	525	105	470	4,582
	620	441	254	1,727	525	105	470	4,582
	620	441	254	1,727	525	105	470	4,582

Remarks : Typical ship parameters, Speed : 16.0 knots

Marine Propulsion System

Bore : 250 mm, Stroke : 330 mm

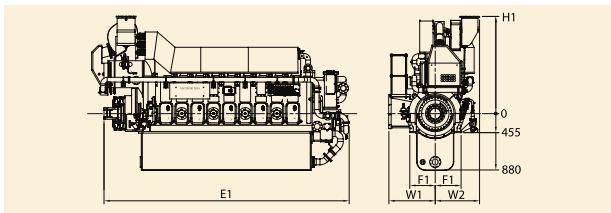
HYUNDAI-HIMSEN

Controllable Pitch Propeller

Permit high skew angles to minimize noise and vibration.

Fixed Pitch Propeller

Guarantee optimum thrust, minimal noise and vibration level.



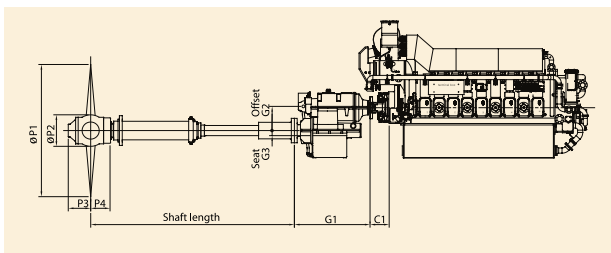
Dimensions

900 rpm	Cyl.	Rated Output at Engine(KW)	Engine dimension(mm) & dry weight(ton)					
			E1	H1	F1	W1	W2	Dry Weight
	6	1,740	3,830	1,924	610	1,035	1,073	23.0
	8	2,320	4,590	2,331	610	1,035	1,073	26.9
	9	2,610	4,970	2,331	610	1,035	1,073	29.3

Specific Fuel Oil Consumption at 100 % Engine Load : 185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only



HYUNDAI-HIMSEN

Marine Propulsion System

Bore : 250 mm, Stroke : 330 mm

Engine Type	CPP Package System	Gear ratio	Propeller speed	Propeller Diameter (without nozzle) P1(mm)		
	Type	(i:1)	(rpm)	Optim.	Min	Max
6H25/33P 900 rpm 1740 kW	ACG 56/450	3.15	286	2,450	2,350	2,550
	ACG 62/450	3.49	258	2,600	2,500	2,700
	ACG 62/450	3.65	247	2,650	2,550	2,750
	ACG 62/525	3.95	228	2,750	2,650	2,850
	ACG 62/525	4.22	213	2,850	2,750	2,950
8H25/33P 900 rpm 2320 kW	ACG 62/525	3.16	285	2,600	2,500	2,700
	ACG 68/525	3.40	265	2,700	2,600	2,800
	ACG 68/525	3.66	246	2,850	2,750	2,950
	ACG 68/600	3.95	228	2,950	2,850	3,050
	ACG 68/600	4.24	212	3,050	2,950	3,150
9H25/33P 900 rpm 2610 kW	ACG 68/525	3.16	285	2,650	2,550	2,750
	ACG 68/525	3.40	265	2,800	2,700	2,900
	ACG 68/600	3.65	247	2,900	2,800	3,000
	ACG 75/600	3.95	228	3,050	2,950	3,150
	ACG 75/600	4.24	212	3,150	3,050	3,250

Engine Type	Hub Dimension (mm)			Gear box & coupling dimension(mm) & dry weight(kg)				
	P2	P3	P4	G1	G2	G3	C1	Dry Weight
6H25/33P 900 rpm 1740 kW	560	410	228	1,493	450	100	470	3,382
	620	441	254	1,493	450	100	470	3,382
	620	441	254	1,493	450	100	470	3,382
	620	441	254	1,727	525	105	470	4,582
	620	441	254	1,727	525	105	470	4,582
8H25/33P 900 rpm 2320 kW	620	441	254	1,727	525	105	500	4,658
	695	530	442	1,727	525	105	500	4,658
	695	530	442	1,727	525	105	500	4,658
	695	530	442	1,970	600	200	500	6,858
	695	530	442	1,970	600	200	500	6,858
9H25/33P 900 rpm 2610 kW	695	530	442	1,727	525	105	500	4,658
	695	530	442	1,727	525	105	500	4,658
	695	530	442	1,970	600	200	500	6,858
	765	580	478	1,970	600	200	500	6,858
	765	580	478	1,970	600	200	500	6,858

Remarks : Typical ship parameters, Speed : 16.0 knots

Marine Propulsion System

HYUNDAI-HIMSEN

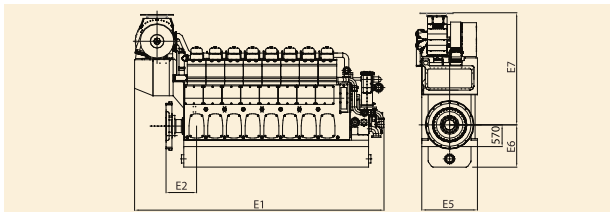
Bore : 320 mm, Stroke : 400 mm

Controllable Pitch Propeller

Permit high skew angles to minimize noise and vibration.

Fixed Pitch Propeller

Guarantee optimum thrust, minimal noise and vibration level.

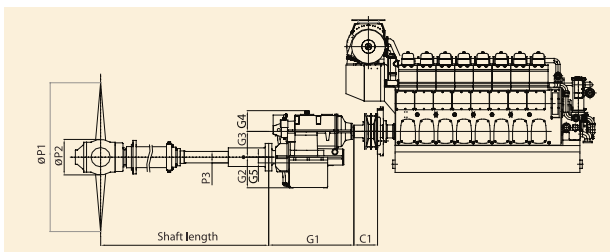
**Dimensions**

750 rpm	Cyl.	Engine dimension(mm) & dry weight(ton)				
		E1	E2	E5	E6	E7 Dry Weight
	6	5,515	800	1,460	1,110	3,295 35.7
	8	6,545	800	1,460	1,110	3,495 43.5
	9	7,085	800	1,460	1,110	3,495 46.6

Specific Fuel Oil Consumption at 100 % Engine Load : 185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only



HYUNDAI-HIMSEN

Marine Propulsion System

Bore : 320 mm, Stroke : 400 mm

Engine Type Rated Output at Engine(kW)	CPP Package System		Gear ratio n : 1	Propeller speed rpm	Propeller & Hub Dimension(mm)		
	Gear box model vertical offset	Hub model			P1	P2	P3
6H32/40P 750 rpm 2,880 kW / FPP 3,000 kW / CPP	ACG750	ECP85	4.65	155	3,900	865	280
8H32/40P 750 rpm 3,840 kW / FPP 4,000 kW / CPP	ACG950	ECP105	5.33	135	4,400	1,065	330
9H32/40P 750 rpm 4,320 kW / FPP 4,500 kW / CPP	ACG950	ECP105	5.76	125	4,800	1,065	330

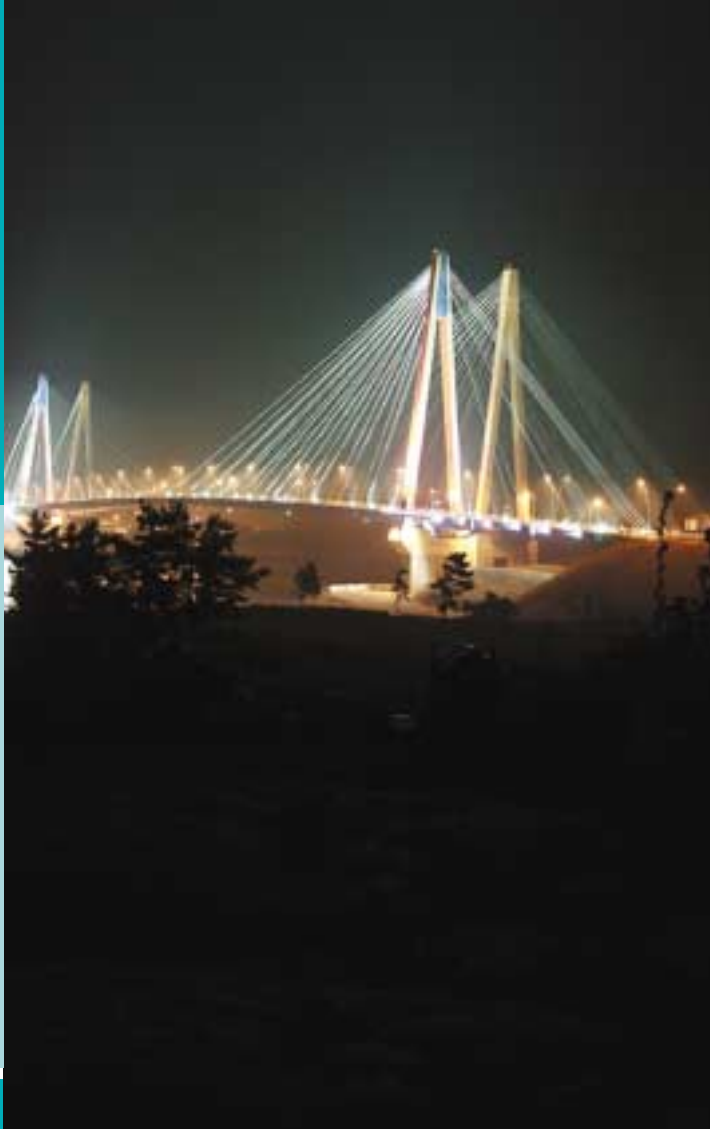
Engine Type Rated Output at Engine(kW)	Gear box & coupling dimension(mm) & dry weight(kg)							Typical Vessel(DWT)
	G1	G2	G3	G4	G5	C1	Gear Dry weight	14 knots
6H32/40P 750 rpm 2,880 kW / FPP 3,000 kW / CPP	2,710	850	750	540	220	622	13,000	7,000 ton Tanker
8H32/40P 750 rpm 3,840 kW / FPP 4,000 kW / CPP	2,710	1,030	950	540	220	622	16,500	9,000 ton Tanker
9H32/40P 750 rpm 4,320 kW / FPP 4,500 kW / CPP	2,710	1,030	950	540	220	690	16,500	10,000 ton Tanker

Remarks : Typical ship parameters, Speed : 14.0 knots

Stationary GenSets

Power Range

H17/28	575~960 kW
H21/32	800~1,800 kW
H25/33	1,440~2,700 kW
H32/40	2,850~4,275 kW
H32/40V	5,700~9,500 kW

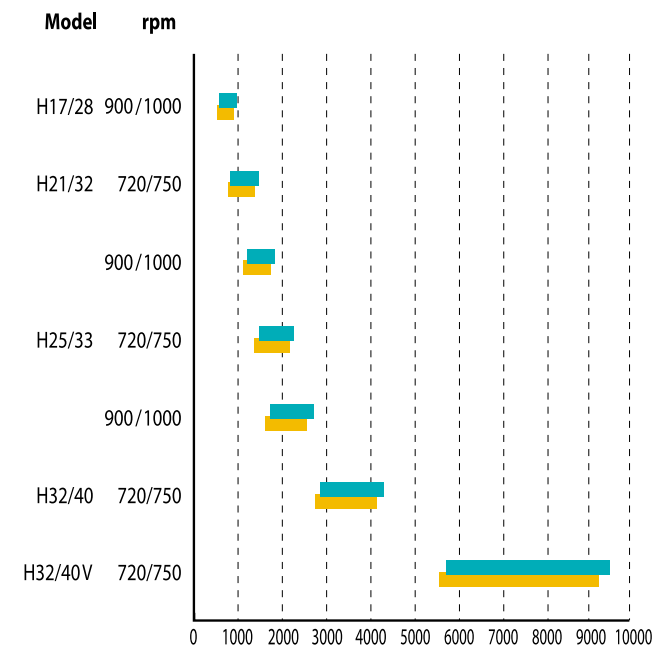




20 MW HiMSen Engine Diesel Power Plant (9H25/ 33 X 8 Sets)

Engine (kW) 
Generator (kW) 

Stationary GenSets



Stationary GenSets

HYUNDAI-HIMSEN

Bore : 170 mm, Stroke : 280 mm

Main Data

Speed	900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
5H17/28	575	538	600	561
6H17/28	690	645	720	673
7H17/28	805	757	840	790
8H17/28	920	865	960	902

Remarks

- 1) The alternator outputs are calculated for an efficiency of 93.5~94 % and a power factor of 0.8 lagging.
- 2) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	900 rpm	1000 rpm
100%	193 g/kWh	193 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

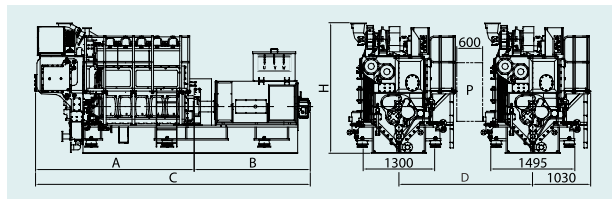
Stationary GenSets

Bore : 170 mm, Stroke : 280 mm

Dimensions

900 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	2,791	2,200	4,991	2,314	7.7	13.6
	6	3,071	2,200	5,271	2,314	8.5	14.5
	7	3,351	2,200	5,551	2,314	9.4	15.6
	8	3,631	2,320	5,951	2,314	10.4	16.7

1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	2,791	2,200	4,991	2,314	7.7	13.6
	6	3,071	2,200	5,271	2,314	8.5	14.5
	7	3,351	2,200	5,551	2,314	9.4	15.6
	8	3,631	2,320	5,951	2,314	10.4	16.7



Remarks

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 2,552 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Stationary GenSets

HYUNDAI-HIMSEN

Bore : 210 mm, Stroke : 320 mm

Main Data

Speed	720 rpm		750 rpm		900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz		60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW
5H21/32	800	752	800	752	-	-	-	-
6H21/32	960	902	960	902	1,200	1,140	1,200	1,140
7H21/32	1,120	1,064	1,120	1,064	1,400	1,330	1,400	1,330
8H21/32	1,280	1,216	1,280	1,216	1,600	1,520	1,600	1,520
9H21/32	1,440	1,368	1,440	1,368	1,800	1,710	1,800	1,710

Remarks

- 1) The alternator outputs are calculated for an efficiency of 94~95 % and a power factor of 0.8 lagging.
- 2) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm	900 rpm	1000 rpm
100%	186 g/kWh	186 g/kWh	187 g/kWh	189 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

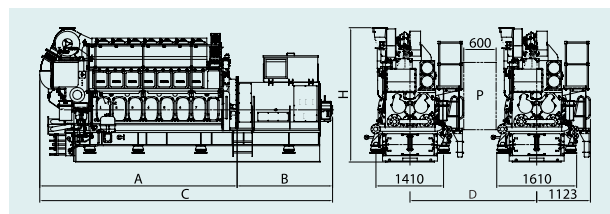
Stationary GenSets

Bore : 210 mm, Stroke : 320 mm

Dimensions

720 / 750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ²⁾	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	3,405	1,926	5,331	2,712	14.0	22.4
	6	3,781	2,093	5,874	2,712	15.6	23.5
	7	4,111	1,923	6,034	2,781	17.1	26.5
	8	4,453	2,175	6,628	2,781	18.5	29.1
	9	4,783	2,265	7,048	2,911	19.9	31.7

900 / 1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ²⁾	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	5	3,411	2,097	5,508	2,712	13.4	22.9
	6	3,781	1,896	5,677	2,781	15.1	26.1
	7	4,235	1,900	6,135	2,781	16.7	28.6
	8	4,453	2,175	6,628	2,911	18.4	29.1
	9	4,783	2,265	7,048	2,911	19.8	31.7



Remarks

- 1) Depending on alternator.
- 2) Weight included a standard alternator (Maker : HHI-EES).
- 3) Without common base frame.
- 4) With common base frame & alternator.

D : Min distance between engines 2,613 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Stationary GenSets

HYUNDAI-HIMSEN

Bore : 250 mm, Stroke : 330 mm

Main Data

Speed	720 rpm		750 rpm		900 rpm		1000 rpm	
Frequency	60 Hz		50 Hz		60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW	Eng. kW	Gen. kW
6H25/33	1,440	1,368	1,500	1,425	1,740	1,653	1,800	1,710
7H25/33	1,680	1,596	1,750	1,663	2,030	1,929	2,100	1,995
8H25/33	1,920	1,824	2,000	1,900	2,320	2,204	2,400	2,280
9H25/33	2,160	2,052	2,250	2,138	2,610	2,480	2,700	2,565

Remarks

- 1) The alternator outputs are calculated for an efficiency of 95 % and a power factor of 0.8 lagging.
- 2) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm	900 rpm	1000 rpm
100%	184 g/kWh	184 g/kWh	185 g/kWh	185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.6 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

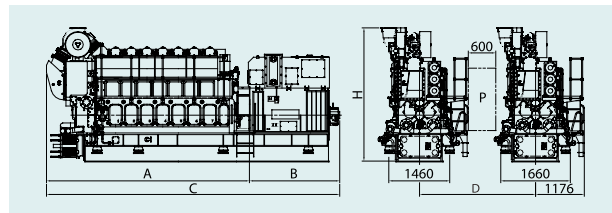
Stationary GenSets

Bore : 250 mm, Stroke : 330 mm

Dimensions

720 / 750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	6	4,414	2,262	6,676	2,961	20.2	29.8
	7	4,794	2,262	7,056	2,961	22.5	33.9
	8	5,311	2,340	7,651	3,241	24.1	39.5
	9	5,691	2,262	7,953	3,371	26.2	45.0

900 / 1000 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
	6	4,414	2,262	6,676	2,961	20.2	29.8
	7	4,794	2,262	7,056	3,241	22.5	33.9
	8	5,311	2,340	7,651	3,371	24.1	39.5
	9	5,691	2,490	8,181	3,371	26.2	45.0



Remarks

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 2,844mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Stationary GenSets

HYUNDAI-HIMSEN

Bore : 320 mm, Stroke : 400 mm

Main Data

Speed	720 rpm		750 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
6H32/40	2,850	2,750	2,850	2,750
7H32/40	3,325	3,203	3,325	3,203
8H32/40	3,800	3,667	3,800	3,667
9H32/40	4,275	4,125	4,275	4,125

Remarks

- 1) The alternator outputs are calculated for an efficiency of 96.5 % and a power factor of 0.8 lagging.
- 2) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.
- 3) In case of diesel oil(Distillate Fuels ISO 8217 DM Grade) operation continuously, 500 kW/cyl. is available.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm
100%	182 g/kWh	184 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.7 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

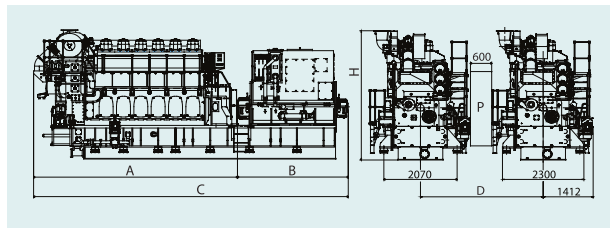
Stationary GenSets

Bore : 320 mm, Stroke : 400 mm

Dimensions

720 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
6	5,760	3,130	8,890	3,959	33.7	68.6	
7	6,112	3,374	9,486	4,130	38.6	77.1	
8	6,602	3,594	10,196	4,130	41.5	82.0	
9	7,092	4,097	11,189	4,130	44.6	89.1	

750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
6	5,760	3,130	8,890	3,959	33.7	68.6	
7	6,112	3,374	9,486	4,130	38.6	77.1	
8	6,602	3,594	10,196	4,130	41.5	82.0	
9	7,092	4,097	11,189	4,130	44.6	89.1	



Remarks

- 1) : Depending on alternator.
- 2) : Weight included a standard alternator (Maker : HHI-EES).
- 3) : Without common base frame.
- 4) : With common base frame & alternator.

D : Min distance between engines 3,408 mm (with gallery).

P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

Stationary GenSets

HYUNDAI-HIMSEN

Bore : 320 mm, Stroke : 400 mm

Main Data

Speed	720 rpm		750 rpm	
Frequency	60 Hz		50 Hz	
	Eng. kW	Gen. kW	Eng. kW	Gen. kW
12H32/40V	5,700	5,529	5,700	5,529
14H32/40V	6,650	6,450	6,650	6,450
16H32/40V	7,600	7,372	7,600	7,372
18H32/40V	8,550	8,243	8,550	8,243
20H32/40V	9,500	9,215	9,500	9,215

Remarks

- 1) The alternator outputs are calculated for an efficiency of 97 % and a power factor of 0.8 lagging.
- 2) Power adjusting upto -5 % derating is generally accepted, other power adjusting must be consulted with engine builder.
- 3) In case of diesel oil(Distillate Fuels ISO 8217 DM Grade) operation continuously, 500 kW/cyl, is available.

Specific Fuel Oil Consumption at Engine

Load	720 rpm	750 rpm
100%	183 g/kWh	185 g/kWh

Remarks

- 1) SFOC tolerance +5 %
- 2) Based on engine driven pumps (L.O pump, H.T pump, L.T pump) attached condition
- 3) Warranted at 100 % load only

Specific Lubricating Oil Consumption

Lub. Oil : 0.8 g/kWh

(Tolerance : +25 % depending on the operating conditions)

HYUNDAI-HIMSEN

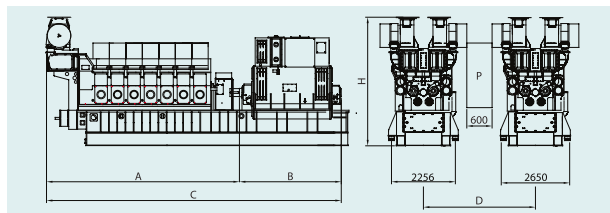
Stationary GenSets

Bore : 320 mm, Stroke : 400 mm

Dimensions

720 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
12	6,624	3,760	10,384	4,723	56.0	108.8	
14	7,295	3,860	11,155	4,723	63.3	121.3	
16	7,914	3,479	11,393	4,723	69.1	130.9	
18	8,585	3,859	12,444	4,794	76.3	141.2	
20	9,344	3,659	13,003	4,794	84.0	153.9	

750 rpm	Cyl.	Dimension(mm)				Dry Mass(ton) ₂₎	
		A	B ₃₎	C ₃₎	H	Engine ₃₎	GenSet _{3),4)}
12	6,624	3,760	10,384	4,723	56.0	108.8	
14	7,295	3,860	11,155	4,723	63.3	121.3	
16	7,914	3,479	11,393	4,723	69.1	130.9	
18	8,585	3,859	12,444	4,794	76.3	141.2	
20	9,344	3,659	13,003	4,794	84.0	153.9	



Remarks

- 1) Depending on alternator.
- 2) Weight included a standard alternator (Maker : HHI-EES).
- 3) Without common base frame.
- 4) With common base frame & alternator.

D : Min distance between engines 4,405 mm (with gallery).

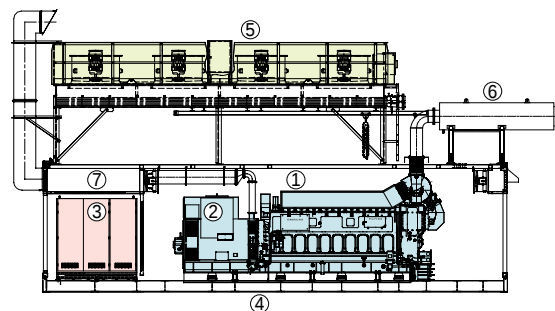
P : Free passage between the engines, width 600 mm and height 2,000 mm.

Note) All dimensions and weight are approximate value and subject to change without prior notice.

General Specifications

Type(Rating)	0.5 MW	0.8 MW	1.1 MW	1.5 MW	1.7 MW
Engine Model	6H17 / 28	8H17 / 28	6H21 / 32	8H21 / 32	9H21 / 32
Generator	645 kW / 673 kW	865 kW / 902 kW	1,140 kW	1,520 kW	1,710 kW
Total Weight	24 ton	30 ton	42 ton	48 ton	50 ton
Dimension (W x H x L)	2.4 m x 3.4 m x 12 m				
Cooling Method	Radiator / Cooling Tower				
Speed	900 rpm / 1,000 rpm				
Fuel	Diesel oil / Heavy fuel oil				

※ The MCR will be based on ISO condition.



- | | |
|-------------------|---------------------------------|
| (1) Engine | (5) Radiator |
| (2) Generator | (6) Exhaust gas silencer |
| (3) Control panel | (7) Ventilation air exhaust fan |
| (4) Enclosure | |

REGLA PPS

REGLA 47.6 MW Packaged Power Station in Cuba
(HYUNDAI-HIMSEN 9H21/32 X 28 Sets)

Features

- Base load operation
- Diesel oil / Heavy fuel oil use
- Compact 40-feet container size
- Mobile type (option)
- Environmentally comfortable
- Low cost of operating and maintenance

Application

- Captive power
- Construction site
- Isolated area
- Rental business
- Pumping station
- Independent power producer

Approval Status of Quality Management System

Product or Service Ranges	Certifying Agency
Design and Manufacture of Two-stroke Diesel Engines, Four-stroke Diesel Engines, Marine Propellers, Pumps & Valves, Press, Conveyor, Robots for Industrial Purposes, Steam Turbine, Gas Turbine, Diesel Power Plants and Engine Components including Turbochargers, Crankshafts, Cylinder Liners, Forged Steel, Shafting	ISO 9001:2000, KS A 9001:2001 ISO 14001:2004, KS A 14001:2004 OHSAS 18001:1999 (DNV)
Nuclear Diesel Generator (Class 1E), Pump and Butterfly Valve	Qualification Approval (KEPIC)
Forging Shop	Works Approval (ABS, BV, CCS, DNV, GL, KR, LR, NK, RINA)
Casting Shop	
Propeller	
Semi built-up Crankshaft	
Solid Crankshaft (TR Forging Crankshaft)	Works Approval (GL)
Welding Workshop & Overlay Welding on Cylinder Cover	

Engine Hi-service system setup

Our target is to provide quickest and most precious technical support and parts supply towards the customers.

We do utmost to minimize the trouble and inconvenience from the ship owners which might be occurred due to the damage caused by the accident.

Easy Access to Engine CS Department

Regardless of the guarantee period whether it is over or not, HHI will make it a rule to support the clients with immediate service in the order of the receipt by e-mail or through homepage. But, considering its seriousness of the damage or the schedule of the vessel, the provision timing of our technical support including repair may be adjusted.

Genuine Spare Parts Purchase Guide

HHI's authorized sales agents will supply the clients with the original genuine spare parts at the competitive condition in aspect of price, delivery time and quality etc. Please do not hesitate to contact our sales agent with the inquiry or questionnaire.

Technical Support

After the guarantee period is expired or in case that the free support is limited even during the guarantee period due to special reason, we also provide the technical support including supervision, reconditioning, conversion, retrofit of alpha cylinder lubricator and technical consultancy etc.

Global Service Network

HHI is very proud of its well organized global service network which is efficiently and systematically designed to meet every requirement of the clients. HHI's direct service centers are established at Rotterdam, Singapore, and Havana in Cuba.



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Hi-Touch Medium Speed Engine

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